

VISIT...

LANZAROTE
Caliente.COM



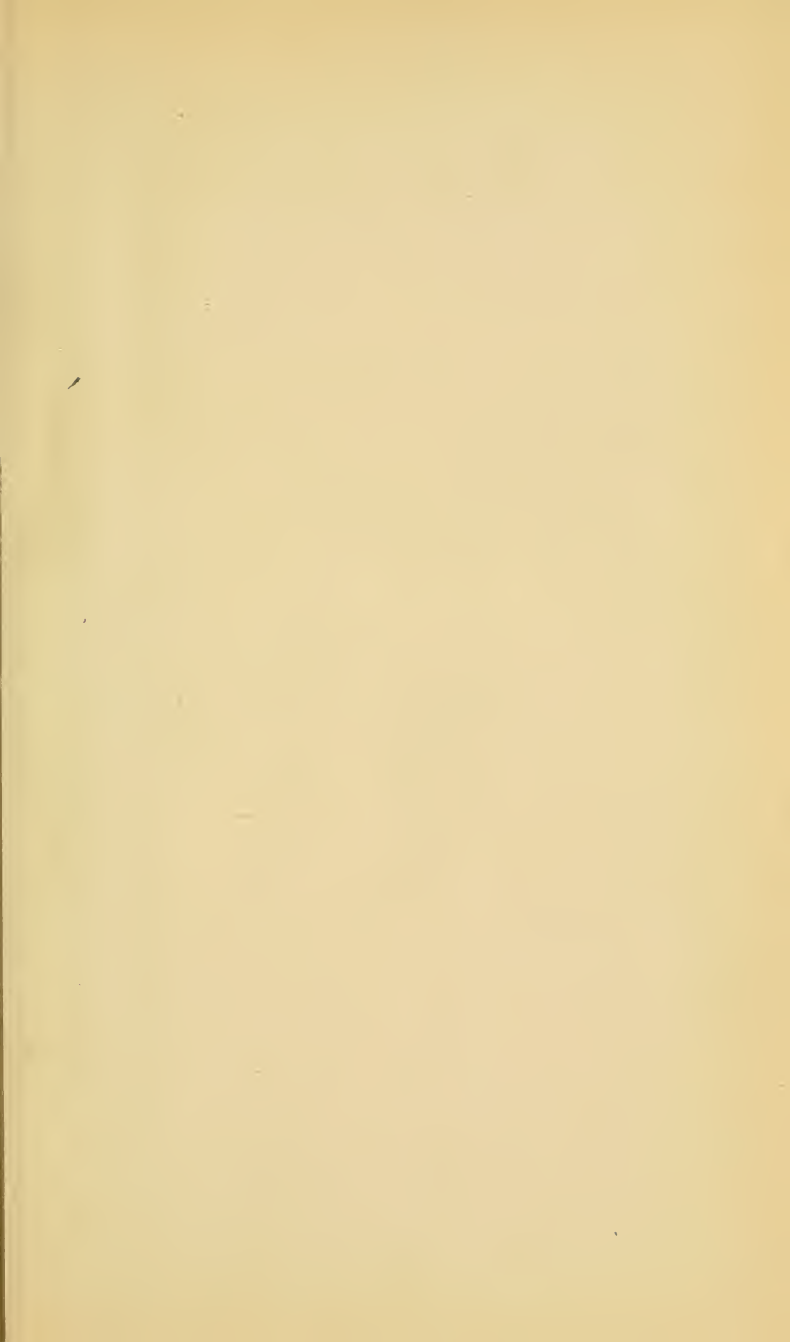


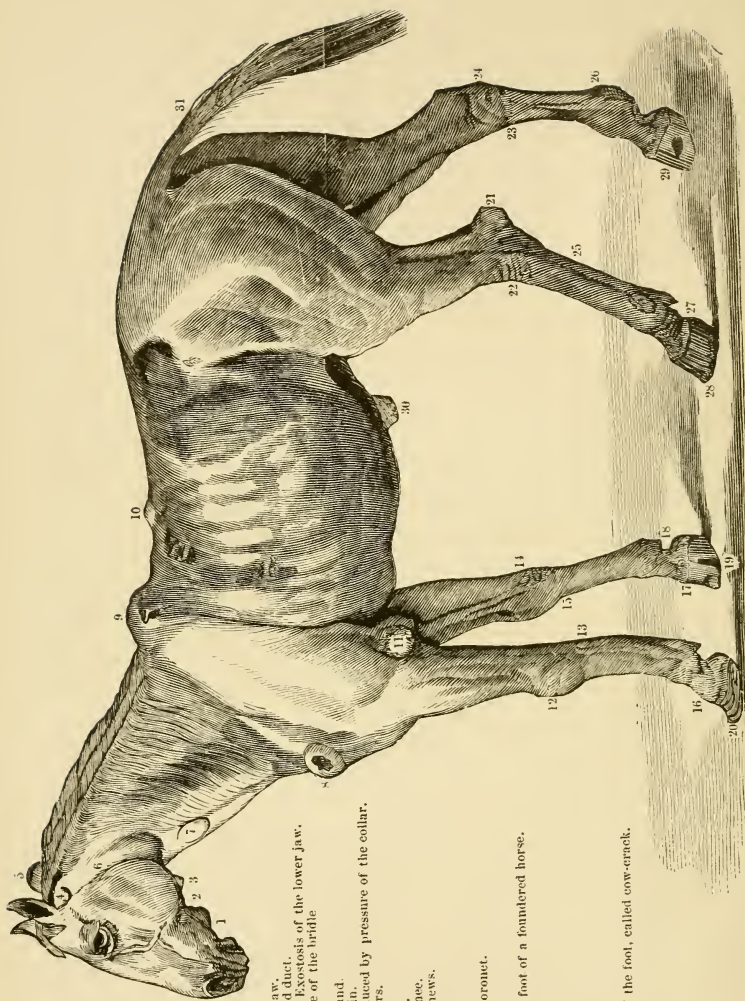
JOHN A. SEAVERNS

TUFTS UNIVERSITY LIBRARIES



3 9090 013 413 279





1. Caries of the lower jaw.
2. Fistula of the parotid duct.
3. Bony excrecence or Exostosis of the lower jaw.
4. Swelling by pressure of the bridle
5. Poll-evil.
6. Inflamed parotid gland.
7. Inflamed jugular vein.
8. Fungus tumor, produced by pressure of the collar.
9. Fistula in the withers.
10. Saddle-gall.
11. Tumor of the elbow.
12. Induration of the knee.
13. Clap of the back sinews.
14. Malanders.
15. Splint.
16. Ring-bone.
17. A Tread upon the coronet.
18. Quittor.
19. Sanderack.
20. Contracted or Ring foot of a foundered horse.
21. Capped hock.
22. Malanders.
23. Spavin.
24. Curb.
25. Swelled sinews.
26. Thick leg.
27. Grease.
28. A crack in front of the foot, called cow-crack.
29. Quarter-crack.
30. Ventral hernia.
31. Rat-tail.

DISEASES OF THE HORSE,

AND

HOW TO TREAT THEM:

A CONCISE MANUAL

OF

SPECIAL PATHOLOGY,

FOR THE USE OF

HORSEMEN, FARMERS, STOCK-RAISERS, AND STUDENTS IN AGRICULTURAL COLLEGES IN THE UNITED STATES.

BY ROBERT CHAWNER,

VETERINARY SURGEON.



PHILADELPHIA:

PORTER & COATES,

822 CHESTNUT STREET.

SF
951
C43
1874

Entered according to Act of Congress, in the year 1874,
By ROBERT CHAWNER,
In the Office of the Librarian of Congress, at Washington, D. C.

PREFACE.

THIS unpretending little treatise is an attempt to supply an oft-expressed want—namely, a brief, popular, and reliable handbook on that department of veterinary science which treats of the horse and his diseases. Although “of making many books there is no end,” yet, strange to say, no work on this subject has appeared within twelve or fifteen years. The books now offered for sale in the book stores are simply republications of foreign books that were written for the past generation; they comprise Youat’s, Mayhew’s, and Percival’s works. It need hardly be proved by any argument of mine that, in accordance with the advancement of medical science in our day a new work (written up to the present time) is absolutely required to instruct the owners of horses in the latest and most approved modes of treatment in all diseases of the horse. Within the past twenty years new diseases, or rather new forms of old diseases, (including the late Epizootic and Spinal Meningitis) have afflicted the equine race in our own country and elsewhere. These diseases were considerably altered in character from the type with which our grandfathers were acquainted. For these reasons it would be exceedingly injudicious to pursue exactly the same treatment recommended in books written for those times. In former days bleeding, blistering, firing, and physicing were indiscriminately pursued without knowing the “why and the wherefore” for so doing.

The diseases of horses is my subject, therefore the reader need not expect (as in some books) a mass of irrelevant matter on the breeding, management, training, or anatomy of the horse.

By far the greater number of the men that own horses either cannot or will not employ a veterinary surgeon, and even in many cases they are too far removed from a qualified practitioner in a country so new and extensive as our own. In the majority of cases, when any emergency arises, either of sickness or lameness of the horse, they run for the nearest horse-shoer or horseman in their neighborhood. In all such instances sufficient knowledge, "if not to heal, at least not to harm," is of the highest importance.

The object of the author has been to supply to such persons a brief, popular and, if possible, reliable work for all such emergencies. How far he has succeeded in accomplishing that object he leaves to the judgment of others.

The Author expresses his indebtedness for the plan of his work to Dr. Henry Hartshorne, of Philadelphia; Professor Cressy, of Amherst; Finlay Dunn, and others.

NEW YORK, Christmas, 1874.

CONTENTS.

	Page
The Causation of Disease (Etiology)	1- 3
The Signs and Symptoms of Disease (Semeiology)	3-12
The Seat and Nature of Disease (Pathology)	12-21
The Uses and Effects of Medicines (Therapeutics)	21-28
External Remedies <i>chiefly used in horse practice</i>	28-30
Liniments and Ointments in general use	30-35

DISEASES OF THE DIGESTIVE ORGANS.

Inflammation of the Tongue and Mouth	37
Ulcerated and Irregular Teeth	38
Lampas	39
Stomach Staggers, or Acute Indigestion	39
Crib-biting	41
Spasmodic Colic, Belly-ache, &c.	41
Flatulent Colic, Windy Colic, &c.	44
Diarrhœa	46
Dysentery (Colitis)	47
Inflammation of the Bowels (Enteritis)	48
Bots, Worms, &c.	49
Inflammation of the Liver (Hepatitis)	50

DISEASES OF THE RESPIRATORY ORGANS.

Catarrh, or Cold in the Head	54
Laryngitis, or Sore Throat	56
Pharyngitis	58
Bronchitis	59
Inflammation of the Lungs	62
Plurisy, or Pleuritis	68
Chronic Cough	69
Roaring and Thick Wind	70
Broken Wind	71
Congestion of the Lungs	72

DISEASES OF THE BLOOD AND SYSTEM IN GENERAL.

	Page
Strangles	73
The late Epizootic (Pink Eye, &c.)	75
Spinal and Cerebro-Spinal Meningitis	80
Purpura	88
Glanders	92
Farcy	96
Rheumatism	98
Weed, or Cellulitis	100
Profuse Staleing	102
Scarlatina	103

DISEASES OF THE BRAIN AND NERVOUS SYSTEM.

Inflammation of the Brain	105
Epilepsy, Fits, &c.	106
Meagrim, or Vertigo	106
Hydrophobia	107
Lockjaw, or Tetanus	108

DISEASES OF THE LOCOMOTIVE ORGANS (LAMENESSES).

Lameness in general	111
Structure of the Horse's Foot	115
Founder, or Acute Laminitis	122
Sub-acute Laminitis	130
Pumice Foot	130
Seedy Toe	131
Pricked Foot	131
Quittor, or Fibro-Chondritis	134
Sand-crack	136
Interference and Overreach	138
Tread and Calking	139
Scratches, Cracked Heels, &c.	140
Grease	141
Corns	143
Thrush, or Frush	144
Canker	145
Contraction of the Foot	145
Spavins, Splints, and Ringbones	146
Injuries and Wounds in general	147
Strains or Sprains in general	149

	Page
Sprain of the Flexor	151
Shoulder Slip	151
Shoulder-joint Lameness	151
Strain of the Back Tendons	152
Strain of the Suspensory Ligaments	152
Broken Knees	154
Bone Spavin	156
Splint	157
Ringbones	158
Thoroughpin of the Knee	158
Side Bones,	159
Windgalls,	159
Thoroughpin	159
Curb	160
Capped Hocks	160
Bog Spavin	160
GLOSSARY	163

GENERAL CAUSATION

OF

DISEASE IN THE HORSE.

Disease may be defined as a perversion either of the functions or of the structures of the body or of any of its parts; for example, the *functions* of such parts as are lined by mucous membrane, or of special organs, such as the lungs, are perverted by the action and effects of inflammation, so that these tissues become perverted and diseased. As an instance of *structural disease*, Heaves (pulmonary Emphysema) may be considered. In this condition the cell walls or lobes of the lungs are broken down, and the anatomy of the organ altogether changed, which disease is commonly called Broken Wind. The former are functional, the latter structural diseases; the one yields to treatment, the other is incurable. Disease, in other words, is a deviation from the normal physiological state or action of the organism under the disturbing influence of morbid causes.

GENERAL CAUSES.

Hereditary : *e.g.*, rheumatism, ophthalmia, tuberculosis, glanders, spavin, and melanosis.

Degenerating : from influences affecting the improper crossing and breeding of animals.

Structural : spavins, splints, ringbones, ossified cartilages, quarter cracks, pumiced feet, &c.

Malformations : parrot mouths, cow hocks, ewe necks, &c.

Functional : over-exertion, over-excitement, emotion, fright, loss of rest, severe work and no work at all, derangement of the nervous system from long journeys by sea or land.

Mechanical: wounds and injuries from falls, blows, kicks, uneven ground, and other accidents, besides surgical injuries, &c.

Obstructive: from hot, badly ventilated stables; want of cleanliness; dirty, bad food or drink; neglect of the bowels, &c. A host of diseases arise from this cause.

Conditional: excess of heat predisposes to diseases of the liver, stomach and bowels, besides exhaustion and injuries of the brain. Excess of cold, with dampness, induces inflammation of the lungs and air passages.

Ingestive causes: poisoning by accident or otherwise.

Medicines in immoderate quantities or at improper times, or remedies of a powerful sort given in their pure form; any and all of these abuses of medicine have done and are doing immense mischief.

Improper food causes dysentery, diarrhœa, colic, &c.

Deficiency of food, with cold, leads to rheumatism.

Excess of food: plethora, bleeding from the nose, and, lastly, to laminitis (founder).

Contactive: mange (itch), ringworm, hydrophobia, glanders.

It must be borne in mind that very often more than one cause is in operation to produce disease.

Influence of age on disease:

During colthood the functions connected with the nutrition of the animal are most active.

The capillary portion of the vascular system is most mature.

The skin surfaces are delicate and impressible.

The heat-making process is less potent than in the mature animal.

The period of teething is marked by reflex excitability.

Fibrin abounds in the exudation resulting from injuries or inflammation in colthood.

The glandular apparatus are especially active.

The diseases most frequent in young animals are:

Eruptive fevers.

Strangles, skin diseases, &c.

Peritonites, resulting from the effects of castration.

Diseases of the air passages, caused by removal from the open country to close city stables.

Bleeding from the nose, called "epistaxis;" and lastly, Swelling of the plates of the mouth, vulgarly called "lampas."

As old age approaches the venous circulation becomes more sluggish.

The vital energy of the system is diminished.

Atrophy and degeneration advance.

Wounds and injuries are hard to repair, and heal very slowly.

Aged horses are especially subject to :

Passive congestions.

Dropsies, in various parts of the body and legs.

Catarrhal affections.

Diseases of the urinary organs.

Farcy and glanders.

Acute indigestion, stomach staggers.

Purpura, &c.

GENERAL SYMPTOMS OF DISEASE

Are chiefly indicated by the pulse, temperature and respiration. A thorough knowledge of each, both in health and disease, is indispensable to a correct understanding of the nature of disease. From the pulse we learn the force of the heart's action, the force of the arterial impulse, the excitability of the nervous system, the fullness of the blood vessels, and the tone and physical condition of the arteries. The pulse should be examined when the animal is at rest and as tranquil as possible. It is increased in colthood and diminished in old age.

The number of beats per minute in the aged horse range from 36 to 40; in the ox tribe, 50 to 55; sheep, 75 to 80; dog, 90 to 100; swan, 200; duck, 136; hen, 140, while in man it ranges from 70 to 75. Not only the frequency, but the character of the pulse is of great significance in determining disease; for example, the pulse of fever is known by moderate acceleration, with variable increase of force in the beat.

The most convenient place to take the pulse is the sub-maxillary artery under the jaw.

The pulse of inflammation is not only increased, but hard or tense.

The pulse of extreme debility is very small and rapid, or thready. The other symptoms of fever are :

Increased heat of the whole body.

Dryness of the skin, mouth, &c.

Diminution in the bulk of the excretions.

Increase of respiration.

Disturbance of the stomach and brain.

It is well to bear in mind that the word "fever" is used in a two-fold sense—first, as a morbid state of the system; and, second, as part of the designation of several complex diseases, such as influenza, &c., where there is not only the fever in the first sense, but also several organs involved. So here are several complex diseases bearing the one name of fever.

The **temperature**, or usual heat of the body, is from 98° to 99° by the medical thermometer, increasing a little during exercise. This is the proper degree of heat while in a state of health, and any increase above the standard is always a certain indication of inflammatory action. This instrument has only within the last few years been introduced into veterinary practice, but it is a most valuable acquisition, for by it we can tell in a moment any improvement or unfavorable symptoms in our patients with an accuracy and certainty that can be learned from no other single examination.

The variations of heat in different diseases, as registered by this instrument, range from 99° to any number up to 113° . It is generally introduced into the rectum and held there for three minutes.

Each disease has its own degree of temperature at which it is either favorable or fatal; for example, in spinal meningitis 104° is always a certain indication that death is at hand, while the same degree of heat is quite common in other diseases without any cause for alarm. 107° to 110° have been reached, and recovery taken place, in such diseases as bronchitis, pneumonites and enterites.

We have already said that the skin is hot and dry during the presence of fever, consequently moisture is always a favorable sign of returning health. But there are some exceptions to this rule; the cold and clammy perspiration of extreme prostration are not to be mistaken for moisture. Coldness of the skin, or inequality of temperature, are more or less unfavorable. After an animal's temperature has fallen a few degrees during some attack of fever, and suddenly rises to its former state, this also is always a most unfavorable symptom. Emaciation is often an important sign, and generally accompanies chronic diseases; it occurs, however, very rapidly in some few acute diseases, such as diarrhoea and dysentery. Young animals in particular during their

attacks become flabby and shrunken from the changes in the adipose tissue, which gives plumpness and roundness to the appearance. Eruptions on the skin are associated with some diseases, such as scarlatina, &c.

Respiratory organs.—The function of the several organs of respiration is to purify the blood by bringing it in contact with the oxygen of the atmosphere, and also the removing of carbonic acid from the tissues, both of which are performed by inspiration and expiration in the act of breathing. The normal average rate of breathing in the aged horse while at rest is from eight to twelve respirations in the minute, but in fever it is much accelerated. During the progress of some diseases the muscles assisting in the act of breathing are allowed to rest while another number take their place in an abnormal fashion; this is commonly seen in pleuritis, and is called “abdominal breathing,” which is a source of relief to the animal.

Difficult respiration may be caused by:

Some irrespirable gas in the stable.

Morbid changes in the state of the blood.

Obstruction of the larynx.

Spasmodic constriction, as in bronchitis, pneumonia, pleurisy, cancer, hydrothorax, ascites, &c.

Coughing depends on a variety of causes which may be known by its character.

Cough is dry and hollow when nervous or sympathetic.

Dry and tight in early bronchitis.

Soft, deep and loose in advanced bronchitis.

Short and sharp in pneumonia, &c.

Roaring is produced by atrophy of the muscles of the larynx, and is generally the result of chronic disease.

The temperature of the breath is increased during the febrile state. Coldness of the breath is a certain sign of the near approach of death.

SYMPTOMS CONNECTED WITH DIGESTIVE AND OTHER ORGANS BRIEFLY STATED.

Deficiency and thickness or viscosity of the saliva occurs generally during fever, and often also in chronic diseases, especially of the throat and stomach.

Appetite is generally deficient in disease, especially of an acute character.

Excessive appetite sometimes occurs in nervous affections, in diabetes, and also from worms in the alimentary canal.

Perverted appetite is one of the symptoms of hysteria in the mare, together with spasms of throat and *closing of the jaws* ; it is also a symptom of *acute indigestion*.

Thirst is excessive in both high fever and low collapse.

Difficulty of swallowing may result from :

Inflammation of the fauces or pharynx.

Spasmodic constriction of the throat.

Stricture of pharynx or esophagus.

Obstruction by a foreign body, tumor, &c.

General debility, &c.

Vomiting never takes place in the horse except from rupture of the stomach.

Bleeding from the nose may result from :

Mechanical injury, blows from whips, &c.

Congestion of the lining membrane of the nostrils.

Congestion of the brain, &c.

This variety of hemorrhage is most common in young plethoric animals.

Bleeding from the womb in mares may be caused by :

Congestion, ulcerations or cancers.

Unavoidable hemorrhage when foaling.

From the bowels by :

Hemorrhoids or piles.

Dysentery.

Ulceration of the bowels.

Cancer of the rectum.

Rupture, or aneurism.

Bloody urine may result from :

Mechanical injury of the bladder or urethra.

Inflammation of the kidneys.

Calculus.

Scarlatina in rare cases.

SYMPTOMS CONNECTED WITH THE SECRETIONS.

Constipation may denote :

Torpor of the muscular coat of the bowels.

Deficient secretion of the liver or intestinal glands.

Defective innervation.

Stricture of the rectum, colon, &c., or cancer.

Intussusception, strangulated hernia, &c.

Smypathetic disturbance from fever, &c.

SYMPTOMS CONNECTED WITH URINATION.

Retention of urine may be caused by:

Stricture of the urethra.

Enlargement of the prostrate gland.

Calculus in the bladder or urethra.

Retention of urine always accompanies spinal meningitis in the horse. When this occurs it must be taken away with a catheter; this is a fact worth remembering, as many horses have died from rupture of the bladder *in this disease*, in prolonged cases.

There are many symptoms connected with the heart which can only be learned by auscultation after long experience, and would not be of any use to ordinary readers in a work of this kind.

SYMPTOMS CONNECTED WITH THE MOTOR APPARATUS.

The mode of lying down of a patient should be carefully noticed, for in many diseases it may assist in the diagnosis.

Inability to lie down is most frequently the result of difficult respiration; the muscles assisting in the act of breathing have the freest scope in the standing position. Most horses have an instinctive dread of this, and so long as nature holds out they will persist in keeping on their feet, lest they should not be able to rise up again. In this respect they differ very much from cattle and other animals. The horse is a highly nervous animal, and no matter how slight an accident or lesion may befall him, if he fancies he cannot or will not rise, a few days lying will so act on his nerves that generally speaking his recovery is very improbable.

In such diseases as hinder him from standing the first thing to be done, therefore, is to get the slings and brace him up with them. These are contrivances that no horseman should be without.

The manner in which horses behave in this way during the progress of disease will be noticed more particularly in those cases in which they are manifested, such as colics, enterites, &c.

Inability to rise may depend on general weakness and debility, rheumatic inflammation of the joints, or injuries

such as fractures or dislocation, and in bad cases of founder (or laminitis).

Paralysis of the extremities, sometimes of one hind leg and often of both, is often seen in our practice; the latter form nearly always accompanies cerebro and spinal meningites.

Loss of sensation generally goes along with loss of power.

Lying on one side is often significant of disease in the early stage of pleurisy; the patient prefers to lie on the healthy side, but when effusion has taken place this is reversed. When the heart is enlarged or violent in its action the sufferer generally cannot lie on his left side.

Great muscular debility accompanies such diseases as influenza, in which the animal cannot stand without assistance; also in acute diseases from actual *exhaustion* and *prostration*.

Spasm is of three kinds—tonic, clonic and choreic. Tonic spasm is fixed rigidity; clonic spasm is ordinary convulsions, *i.e.*, successive contractions of the muscles at short intervals; choreic spasm is a term used to indicate the jerking, irregular movement of the muscles, not controllable by the will in cases of chorea.

SYMPTOMS CONNECTED WITH THE SENSORY APPARATUS.

Of these pain is the most important. Horses suffer pain as much as the human species, but absence of speech (which should excite our pity) hinders them from describing the various sorts, as acute, griping, twisting, smarting, &c. We have some indications, however, of pain; flinching when touched on any part; tenderness on pressure, as in laryngitis and enterites; sometimes seen in the eye and general appearance. Sometimes pain is relieved by pressure, as in colic and other diseases, which shows the absence of inflammation. Pain is not always at the seat of the disease; thus in disease of the hip joint the pain is felt at the knee, disease of the liver about the scapula, irritation of the uterus on the top of the head.

The eye affords many indications of disease; projection of the haw (or membrana nictitans) is always a sign of lock-jaw. A prominent and turgid condition of both eyes occurs in acute ophthalmia and in congestion of the brain.

Sinking of one eye indicates local atrophic disease. The expression of the face is usually altered in acute disease. Anxiety and distress are easily discerned in our patient.

Terror is shown by the expression of the face. Young animals brought suddenly into contact for the first time with the sights and sounds of city life are very much alarmed and terrified by unusual experiences. I have seen a young horse frightened to death, one 17th of March, by a brass band.

Rage is very easily seen in hydrophobia and some other diseases.

What has been said already on General Semeiology will be sufficient for the plan pursued in this unpretending work, with the exception of a few words on physical diagnosis.

PHYSICAL DIAGNOSIS.

By this means we determine the actual and relative position, material condition and functional action of the different organs contained within the body.

There are at least six modes of examination of the thoracic and abdominal cavities, but for all practical purposes two are sufficient, percussion and auscultation.

By **percussion** we learn much of the physical condition of such organs as the lungs, heart, and abdominal viscera, through the variations of resonance and resistance when the walls of the thorax or abdomen are lightly struck.

Auscultation is equally important, but somewhat more difficult in its application on account of the complexity of sounds afforded by it; this is especially true in cattle practice, but is not so difficult in diseases of the horse. It consists in direct listening to the sounds produced within the cavities of the body, by placing the ear, with or without an instrument, upon the surfaces thereof.

General expansion, or local bulging, and general retraction and local depression, are the signs most frequently noticed in the following diseases.

Retraction, or local depression of the thoracic walls, may result from :

Absorption of pleuritic effusion.

Tuberculization.

Pneumonia.

Pleuro-pneumonia.

Infiltrated cancer of the lungs.

Diminution of the expansion and elevation of the ribs in breathing in:

Pleurisy.

Pneumonia.

Intercostal rheumatism.

Paralysis.

Hydrothorax.

Percussion consists in simply tapping with the ends of the fingers the body of the animal.

A majority of practitioners use no kind of instrument for this purpose, but placing the middle finger of the left hand in the spaces between the ribs (when they want to percuss that portion of the body), and then striking it with the ends of the fingers of the right hand, listen to the sounds produced. In using percussion as a means of physical diagnosis we note:

The clearness or dullness of resonance produced.

The duration of the resonance.

Its special character.

The degree of resistance felt.

It is indispensable for every student of veterinary medicine that he should be familiar with the normal and natural sounds observed in health, and, as far as possible, the reason of the meaning of every sign.

Two or three very simple facts explain the use of percussion in diagnosis. When any solid body is struck the sound elicited varies according to its material, form, size; and if hollow the condition of its walls and that of its contents. The thorax (or abdomen) of the horse, having a certain general form, size, condition of its walls, and proportion of air, blood, and solid structure in its contents, will give forth a certain degree and kind of resonance.

Whatever alters either the state of its walls, or the proportion of air, fluid, and solid contained within them must give rise to an alteration of percussion-resonance. For example: The more air and the less fluid or solid contained within the parts of the chest which is percussed the clearer and fuller the resonance, and as a general rule the less the resistance to the finger. Any increase in the relative proportion of liquid (as in pleuritic effusion), or of solid (as tuberculization), must cause a duller or lesser degree of resonance, and, other things being equal, a greater degree of resistance. Thus diminution of clearness and duration of the percussion

sound, with increased resistance of the walls of the chest, occur in :

- Pneumonia.
- Pleurisy.
- Tuberculization.
- Hydrothorax.
- Cancer, &c.

Increased clearness and duration of resonance, with decrease of resistance, occurs in heaves, or pulmonary emphysema, atrophy, or hypertrophy of the lungs, &c.

In auscultation, as well as in percussion, a comparison is made, not only with the normal standard, but also between the two sides of the body.

Respiratory sounds :

- Normal respiratory murmur.
- Prolonged expiratory sound.
- Harsh tubular blowing.
- Bronchial breathing.

Dry secretory sounds :

- Sibilant, hissing or whistling.
- Sonorous.
- Dry crackle.

Moist :

- Fine crepitant ^Arâle.
- Coarse crepitant (or mucous ^Arâle).
- Humid crackling or gurgling.

Friction sounds are peculiar to pleurisy and pericarditis at the stage of adhesion.

Bronchial breathing occurs when the lung is being solidified.

The sibilant and sonorous sounds are heard as the result of narrowing and obstruction, by congestion, mucous, &c.

The dry crackle is associated with incipient or infiltrative tubercle.

Amongst the moist sounds, the finest or most delicate is the fine crepitation of pneumonia. It is very well imitated by rubbing a few hairs of one's head between the thumb and finger near the ear.

Feeble respiratory murmur is heard in one or both lungs in cases of :

- Foreign bodies in air passages.
- Bronchitis.
- Pneumonia.
- Pleurisy.

Infiltrated tubercle.

Emphysema.

Hydrothorax.

Intercostal rheumatism.

Paralysis.

The coarse crepitant râle, (or mucous râle), is observed in :

Capillary bronchitis.

Late stage of pneumonia, &c.

Displacement of the heart, diaphragm, liver, spleen, and stomach sometimes occur from pleuritic effusion and other causes.

GENERAL PATHOLOGY.

The seat of disease may be, says an eminent physician,

In the constitution.

In special tissues.

In particular apparatus.

In individual organs.

Morbid state of the animal economy:

Over-excitement.

Fever.

Depression.

Exhaustion.

Degeneration of organic force (cachexia).

Toxamia.

Morbid states of organs:

Over-excitement.

Hypertrophy.

Irritation.

Inflammation.

Chronic inflammation.

Atony, exhaustion.

Degeneration.

Of the above the most important general or systemic morbid states may be included under fever, toxæmia, and cachexia, constituting a tripod of systemic disease.

A similar tripod of the most frequent and important local disorders may be established of irritation, inflammation, and atrophy.

Symptoms of fever:

Increased heat of the whole body.

Dryness of the mouth, skin, &c.

Frequency of the pulse.

Increased respiration.

Muscular debility.

Diminution in bulk of the excretions.

Functional disturbance of the brain, stomach, &c.

Heat is the most essential characteristic of the febrile state, having given name to it in all languages; this is produced by excessive tissue metamorphosis under the abnormal tension condition of the nerve centres.

Toxæmia is a term used to indicate poisoning of the blood. Certain diseases, more than others, are believed, upon the strongest evidence, to depend upon a chemical and dynamic change in the blood, to which the name of toxæmia is applied. Toxæmia originates at least in two ways:

1. By the introduction from without of some morbid poison into the blood, as in the case of pleuro-pneumonia and splenic appoplexy in cattle, as well as glanders and other diseases of the horse.
2. By the non-excretion, and consequent accumulation in the blood of post-organic or excrementitious substances, which by their own properties, or the change they undergo, prove injurious to the system.

All of the zymotic diseases, as well as the exanthematic (smallpox in sheep, for example), have their origin explained by the fact of these modes of blood poisoning.

The **effects** of these poisons when introduced into the system of an animal are both local and constitutional symptoms. The constitutional symptoms, which begin the attack, are nearly alike for them all; the local symptoms are peculiar for each one.

Toxæmia from non-elimination of the excretions is seldom, if ever, an idiopathic affection. It is therefore best studied in connexion with those diseases of which it forms a secondary, or resultant, though important part.

Cachexia is usually understood to mean a depraved habit of system; an error of development or nutrition affecting the general state of the organs and functions with perversion or debility. The history of the different cachexia belongs rather to special pathology. We see instances of this in tuberculosis in cattle, as well as farcy in the horse. The formation of tubercle in the lung and other tissues in the horse on post-mortem examination is very well demonstrated.

The term "**tuberculosis**" is applied to certain slow, specific inflammations, abscesses, ulcerations, and other disorders of the skin, mucous membrane, glands and bones which

occur during the progress of those diseases, and are characterized by the moderate degree of vascular excitement attending them. Hereditary predisposition is the chief cause of tuberculosis, but other causes also promote the diathesis, such as change from a warm to a damp locality, want of proper food, light and warmth, dark, foul stables, &c.

Tuberculosis may be defined (pathologically) as a constitutional tendency to the formation of blood, the plasma of which is defective in organizable capacity, so that instead of healthy tissue, it forms abortive blastema, which accumulates as a deposit, which is called tubercle.

The effects of this deposit are:

Obstruction and arrest, or impairment of functions.

Inflammation, as in tubercular pneumonia.

Ulcerative destruction by the repeated formation and softening of the matter, which produces cavities in the organs involved.

The organs most frequently attacked are the lungs and the lymph glands.

The order of frequency with which different organs are affected with tubercle is as follows:

Lungs.	Spleen.
Intestines.	Kidneys.
Lymph glands.	Liver.
Larynx.	Bones.
Serous membranes.	Uterus.
Brain.	Testicles.

The parts especially preferred by tubercle for its deposit are in the lungs, the apex, in the pia mater, about the base of the brain, the grey substance, in the bones, in the bowels, the lowest part of the illum, &c.

Hypertrophy is strictly an over-growth, an increase of the size and weight of a part without change of tissue. It is only in recent times that this has been clearly distinguished from enlargement with alteration of tissue.

A constant law of the animal economy is, that within certain limits the growth of an organ is in proportion to its exercise, provided this exercise is not too violent, and is alternated with sufficient periods of repose.

The three causes of hypertrophy are:

1. Increased exercise of a part in its healthy functions.
2. Increased accumulation in the blood of the particular materials which a part appropriates in its nutrition or secretion.
3. Increased efflux of healthy blood to the part.

Intermittent pressure or attrition cause hypertrophy ; *constant* pressure, atrophy or absorption.

Atrophy is the wasting and diminution of a part without change of structure ; but most pathologists include also under the same term such defects of nutrition as result in degenerative changes.

The causes of atrophy are :

Deficient exercise of a part.

Deficiency in the supply of blood.

Defective supply of nervous influence.

Inflammation in the part.

Stimulation and irritation are often inconveniently confounded. It would be convenient and desirable to confine the former term to excitation within healthy or normal limits, applying the latter term only to such an excessive action upon a part as produces morbid effects. Irritation is an arrest of a vital movement, in a part, life being considered as a molecular motion.

Inflammation occurs in connection with so many diseases, attacks almost all parts of the animal body, and constitutes in one part or another so many of the cases of every day practice, that a correct notion of its general nature and phenomena is of the greatest practical importance.

The more common and general causes of inflammation are the following :

Exposure to cold, especially when heated or exhausted, as for example—keeping a horse shivering out of doors to groom him after a long journey. These causes were already treated of in a former chapter, and they need not be repeated here. We may say, however, in passing, that anything that interferes with the healthy balance of the circulation, or drives the blood from the skin (or capillary vessels), will cause congestion of internal organs, arrest important sections, depress vitality, and thus become a fruitful source of many diseases.

Predisposing causes of inflammation are such as result from peculiarity of temperament, weakened circulation from disease, over-work, impure air, deficient nutrition, &c. Exciting or local causes are called irritants ; they may be either mechanical, chemical or vital—these act directly. Other exciting causes act indirectly, such as the introduction of poison into the system, the sudden suppression of discharges which are natural or of long standing, the repression of cutaneous eruptions, &c., all of which promote inflammation.

The actual and immediate causes of inflammation are such causes as modify the molecular state of the tissues, and arrest for the time the usual interchange of material between the tissues and the blood. This induces a true inflammation.

An example of the three stages or processes of stimulation, irritation, and inflammation, may be very well studied in the action of a common mustard plaster applied to the skin. Its first effect (or the only one), if the mustard be diluted, is merely stimulant, the skin grows warmer and redder and its sensibility is moderately heightened. If it be strong and allowed to remain, irritation is produced; this is shewn by pain, tenderness on pressure, &c. If the irritating matter be now withdrawn, all of these may subside without going further. But if the irritation be continued up to a certain point of duration, and intensity, inflammation occurs, then we have redness, heat, pain and swelling, with effusion of **lymph**, which in the cutaneous inflammation caused by a sinapism or plaster of cantharides, raises up the cuticle in the form of a blister. The essential minute phenomena of inflammation, as **regards the circulation**, are:

Central stasis.

Concentric hyperæmia.

Exudation.

The actual cause of inflammation, we have said already, is the arrest for the time of the usual interchange of material between the tissues and the blood.

Stimulation causes active hyperæmia. The arteries under its influence exhibit reflex action. When stimulation is carried to morbid excess, interrupts, by the molecular disturbances it induces, the normal life-movement of the part, and checks the interchange of particles going on between the capillaries and the tissue, and, as a consequence, stagnation ensues.

Inflammation, then, may be simply defined as a local lesion of nutrition, with concentric vascular excitement, resulting in exudation. The products of inflammation by exudation are—

Serum, Blood, Mucus, Lymph.

The inflammatory effusion of non-fibrinous serum is rare. The term is often applied, however, clinically to a serosity which contains a small proportion of fibrin, as in the effusion which follows pleurisy.

Blood is exuded occasionally only; *e.g.*, in dysentery, in nephritis, and (dissolved) in pneumonia.

Mucus, a certain portion of which constantly moistens the surface of mucous membranes in health, is altered both in character and in amount by inflammation. The general statement is that, when a mucous membrane is inflamed (*e.g.*, in bronchitis), its secretion of mucus is at first arrested, then increased and, lastly, perverted in character.

Coagulable lymph is, however, the characteristic ingredient of inflammatory exudation.

Inflammatory lymph is divided by Paget into fibrinous and corpuscular lymph, with the assertion that, as a general fact, the more fibrin a specimen of lymph contains (provided it be healthy fibrin), the greater the probability of its being organized into tissue; while the larger its proportion of corpuscles, the greater is the likelihood of supuration or some other degenerative process, and the more tardy its development into tissue. The "biography" of the lymph of exudation consists in its resorption, or its development into connective, fibrous, elastic, osseous, cartilaginous or vascular tissue, or into epithelium, or its degeneration into *pus*, *granule-cells*, *exudation granules*, &c.

The rapid resorption of a moderate amount of exuded lymph constitutes the resolution of an inflammation.

Its development is also a form of resolution, but with modifications of the condition, dimensions, &c., of the part.

This is in some instances merely restorative.

The degeneration of the exudation results in its being thrown off as *pus*, or finally absorbed in the form of molecular exudation granules. Whether immediate absorption, development, or suppurative or granular degeneration shall occur in any particular case of inflammation will depend—

On the state of the blood.

On the seat of the inflammation.

On the degree of the inflammation.

As to the seat of the attack, generally serous and synovial tissues—namely, (pleural, peritoneal, arachnoid articular)—are more subject to adhesive inflammation, *i.e.*, with the exudation of fibrinous lymph. Mucous tissues seldom exhibit this, being more prone to suppurative inflammation. Such special organs as the lungs, liver, &c., when inflamed, may suppurate, or the lymph exuded may degenerate into exudation granules, and be finally absorbed.

The degree of the inflammation exercises an important influence. The greater its intensity or severity—(*i.e.*, the more decided and extended the local lesion of nutrition

and concentric hyperæmia)—the further will the lymph exuded be removed in its primary character from that transuded in the natural state of the part; and the more will its subsequent changes differ from those of normal nutrition and development.

Degeneration may affect both the fibrinous and the corpuscular portion of inflammatory lymph.

The fibrinous part is subject to :

Drying into horny concretions.

Fatty softening.

Liquefactive degeneration.

Calcareous and pigmental degeneration.

The corpuscular portion of lymph may also undergo :

Withering and drying.

Conversion into granule cells by fatty degeneration.

Calcareous and pigmental degeneration.

Most commonly, however, into degeneration of the lymph cells into blood cells, the whole of the lymph being transformed into pus. Pus is a greenish-yellow creamy fluid, consisting (under the microscope) of the liquor puris and pus cells or corpuscles. Chemically, pus may be approximately tested by its solubility in liquor potassæ.

Suppuration is either :

Circumscribed, as in abscess.

Diffusive, as in erysipelas.

Superficial, as in some diseases.

The effects of inflammation upon the part or organ involved are—

Enlargement.

Degeneration.

Induration.

Ulceration.

Softening.

Mortification.

We thus see that very different, and even opposite, results may follow from different degrees or kinds of inflammatory action.

Specific inflammations require merely to be mentioned here. They occur in our domestic animals in the following diseases :

Farcy and glanders.

Rheumatism, melanosis.

Eruptive fevers of cattle.

Carbuncular erysipelas.

The different exanthematous diseases of sheep.

These are distinguished from ordinary inflammation, and from each other, in that—

Each exhibits a peculiar plan of morbid process.

Each depends upon a peculiar cause.

The effects of said cause are irrespective of its quantity or extent.

They are diffusible from one part of the body to another.

They exhibit different stages of the morbid process.

Some of these, as rheumatism, is self-limited (dying out).

Chronic inflammation.—In this form of inflammation there is more or less redness, heat, swelling, and pain; yet they are wanting in exudation, without which (pathologically) there is no inflammation.

The characteristics of this state are:

1. Enlargement of the blood vessels of, a part with the flow of a large amount of blood through it.
2. Exaggeration of the sensibility of the part, and morbid irritability.
3. Deficient or irregular functional power.
4. Unusual proneness to acute or sub-acute attacks of actual inflammation.

PATHOLOGY OF THE NERVOUS SYSTEM.

For the purpose of pathological study, we must remember that the anatomical elements of the nervous apparatus are—

1. **Grey vesicular.**

2. **White, tubular nervous substance;** the former being arranged in ganglia, the latter in nerves and commissures.

Physiologically, the functions of the ganglia (nerve centres) are to receive, reflect, accumulate (generate) and distribute nerve force. The sole function of the nerves and commissures is to transmit or conduct it.

As a whole, we may state the offices of the nervous apparatus to be as follows:

Excito-motor.

Excito-secretory.

Sensory.

Voluntary motor.

Sympathetic, and

Co-ordinate.

And in man—

Intellectual.

Emotional.

The primary disorders to which this apparatus is

liable are—1, anæsthesia, *i. e.*, that condition in which the animal remains without cognizance of impressions made on a surface which is normally sentient.

Subjective hyperæsthesia, or perversion of sensibility, may be either functional or organic. Functional nervous disorder results generally from an abnormal state of the blood.

Muscular Paralysis, or that condition in which a central volition (or the excitement equivalent to it) fails to produce its normal effect of muscular contraction.

Muscular, as well as sensational, paralysis, dependent on an affection of the brain, occurs on the opposite side to that of the encephalic lesion.

Paralysis of one side of the body is called hemiplegia. Paralysis of both hind extremities is called paraplegia; with or without loss of sensation.

Involuntary contraction of voluntary muscles, commonly called convulsions, may result from worms in the bowels, indigested food in the stomach, besides other causes.

The three forms of spasmodic disturbance to which the muscles are liable under a morbid alteration of innervation, viz., the **tonic**, **choreic** and **clonic**, are illustrated respectively in spasms or cramps.

Tetanus, in horses and sheep.

Chorea,
Epilepsy, } in dogs.

A further important pathological sub-division exists as to the method of origination of those functional disturbances of the nervous system, to which we have been alluding.

The source of any of the above forms of nervous disorder, hyperæsthesia, anæsthesia, muscular paralysis or convulsions, may be (when not purely local) either from :

Central organic disease.

Blood perversion or defective nutrition.

Purely sympathetic disturbance.

Paralysis from central organic disease occurs from softening of the brain or spinal chord, or from pressure on those organs from effusion or otherwise.

From blood perversion in such diseases as spinal meningitis. Paralysis from sympathetic disturbance occurs in traumatic tetanus.

It is far from easy in many cases to mark the diagnosis between these different modes of causation of nervous symptoms; but when the diagnosis has been made in any instance,

the prognosis is most favorable in the last, less so in the second, and most unfavorable in the first; *i. e.*, when the symptoms have their origin in an actual organic lesion of an important nerve centre.

GENERAL PRINCIPLES OF TREATMENT OF DISEASE.

Remedies classified according to the indications of treatment in various disorders of animals. Regarding them in this aspect they may be studied thus:

Anodyne and Calmative, *e.g.*

Opium, Ether, Chloroform, in cases of Colic, Enterites, &c.

Belladonna, Camphor, Aconite,

Carbolic Acid, Prussic Acid,

Pyroxylic Spirit, or Medicinal Naptha.

These remedies (with few exceptions) are used internally as well as externally to allay irritation and inflammation.

Protective, Surgical dressings for wounds, injuries, &c.

Glycerine, Linseed Oil,

Gum Arabic, Marsh Mallow Root.

Balancive, *e.g.*, cold to an over vascular part.

Blood letting, &c.

Eliminative, *e.g.*, Colchicum in rheumatism, purgatives,

Iodide of Potassium, &c.

Alterative, *e.g.*, Arsenic in skin diseases. Iodine, Sulphur, &c., Antimony.

Economic, rest, astringents, retarders of tissue Metamorphosis.

Recuperative Tonics and Stimulants, *e.g.*

Tonics.—Cinchona, Sulphate of Iron,

Sulphate of Copper, Nux-vomica.

Gentian, Rhubarb, Nitric Acid.

Stimulants diffusible.—Spirits Ammonia, Alcohol,

Ether, Oil of Turpentine,

Spirits of Nitric Ether,

Potassium, Soap, &c.

The modes of treatment most frequently called for in the management of acute and subacute affections of the domestic animals.

These may be named as treatment for:

Arresting and mitigating inflammation during the existence of the febrile state.

The Supporting, The Antidote and the Alterative treatment.

Under the first head, namely, the treatment of inflammation, we place:

Arresting and mitigating inflammation.

Rest, Cold Applications,
Venesstion, Local Depletion,
Purgation, Diet,
Nitrate of Potassa, Ipecacuanha.
Veratrum Viride, Aconite,
Digitalis, Opium, Counter Irritation,
Actual Caution.

An elaborate work might, of course, be written upon the topics included in this table, but a few words with special reference to the general treatment of the horse in his various afflictions may not be here out of place. I am bold to assert that if the following cautions were observed and the advice here given followed, one-half the animals in the United States would be saved to the commonwealth, that die every year from the neglect of those alone, namely:

Prevention of diseases, by attending to the laws of Hygiene.

Timely treatment of disease in its incipient stage.

Rest in the beginning, middle and end of all disease until strength is regained, and health finally established.

These are particularly important in all diseases of locomotion, such as founder, ringbone, spavin, or any other form of exortoris, then, timely remedies, and above all things rest. Were these attended to one-fourth of the animals that are yearly lost might be saved.

Cold Applications are very important in the treatment of inflammation; they are very useful in cases of acute founder (or laminitis), and in such affections as disturb the brain or any of its coverings, as in phrenitis and cerebro-spinal meningites. Ice has been successfully used in these cases as well as in cases of sun-stroke.

Bloodletting, whether from the jugular vein or any of the smaller arteries is one of the oldest, and has been one of the most universal remedies for inflammation, although it has been out of fashion now for some years. "The theory of inflammation as held by the most accurate pathologists inculcates that the determination of blood towards an inflamed part conspires with the central stasis in causing the

exudation, and that a constant proportion exists between the degree of this active turgesence and the amount of the exudation, and the character of the changes it subsequently undergoes. Now, of the cardinal elements of the inflammatory process, the local arrest of nutrition and capillary stasis cannot be directly affected by treatment. Nor when the exudation occurred can any but palliative or expectant measures be applied to the management of its changes. But the active concentric determination of blood in the arterial excitement can be essentially modified by the abstraction of several quarts of blood. By this special operation we lessen :

The fulness of the vessels.

The number of red corpuscles.

The force of the heart's impulse.

The force of the arterial impulse.

The excitement of the nerve centres.

And by each and all of these influences we diminish the vascular excitement connected with, an inflammation, and thus lessen the amount of the resultant exudation, and render its bigrophy more normal, its changes less degenerative and destructive.

The great object to be attained in blood-letting, where it is imperatively necessary, is to balance the circulation.

There is not a single case of any kind of disease in which the indications or object of medical treatment is to reduce the strength or lower the vital power of the animal's system.

What we aim at is to reduce the disproportionate vascular excitement or congestion, and restore the balance of circulation.

The indications for abstraction of blood in all diseases exists in the following states of the system :

High vigorous inflammation.

Active congestion threatening inflammation or hemorrhage.

General plethora.

Violent spasms.

Sudden passive congestion in horses of high condition.

The quantity, according to the age, size and condition of the animal, may vary from two to five quarts.

The safest instrument for this purpose is called a phleme. The head of the patient is held up while the phleme is struck with a short stick made for that purpose. The skin over the jugular vein is then carefully pinned up with a suture.

The pulse is the infallible guide as to the quantity of blood sufficient in these cases ; when it falters, it is time to say stop.

Purgation, especially by saline cathartics, is frequently useful in this treatment. There are, however, some exceptions to this rule.—1st. Never give purgative medicine in peritonitis or inflammation of the bowels, and especially never give large doses of aloes nor any purgative to young colts. Linseed oil is the proper laxative in these cases.

Diet.—No stimulating food, during inflammation, is to be permitted, boiled roots, apples, &c., afterwards sufficiency of good oats, &c.

Nitrate of Potassa is a very valuable adjunct to or in some cases substitute for the antimonial nitrate, it is most invaluable, in many cases, as acute laminitis and other diseases in one or two ounce doses.

Ipecacuanha, combined with opium is especuallly valuable in bronchial, tracheal, and laryngal inflammation, and in dysentery.

Veratrum Viride is lately assuming an important place as a cardiac and arterial sedative and promoter of the secretions.

Aconite is likewise a favourite medicine with some practitioners in the management of pneumonia and pleurisy, but a very deadly remedy in ignorant hands.

Digitalis is much used in horse practice, especially in bronchitis. Opium is an arterial stimulant, and is therefore (as a general rule) inappropriate in the early stages of an active inflammation. Opium first excites and then oppresses the brain, in a word produces determination of blood to the head, and is therefore contraindicated by an already existing tendency to cerebral congestion. Besides these, opium constipates the bowels ; this fact is of less importance than either of the two preceding, as the constipatively tendency can be counteracted, if desirable, by other medicines, while in other cases it aids in the treatment as in dysentery.

In peritonitis, where the extent and visceral connexions of the tissue affected induce more rapid prostration, as well as more serious nervous irritation than in other inflammations, opium has become the main dependence with very many practitioners, even from the beginning of the attack.

Counter Irritation is a measure of treatment often of great service, especially in the later stages of inflammation

(after general depletion), or in such cases as are unattended with much vascular excitement. In the very incipency or incubation of an inflammatory attack, *i.e.*, in the stage of mere irritation or congestion, counter-irritation (by mustard) may prevent the further progress of an inflammatory attack. But if the case is advanced beyond this stage, counter-irritation may do much mischief.

Counter-irritation is usually the most important part of the treatment of chronic inflammation, of which we shall speak in a subsequent chapter.

To recapitulate the order of time in which long experience has prescribed the use of the different means now included under the head of the treatment for subduing and mitigating inflammation, supposing most of the main remedies of this class to be called for in a given case, we would first resort to :

Abstraction of blood, next to

Saline purgatives, then to

Nitrate Potassa.

Veratrum Viride or Aconite.

Sometimes Opium, with or without the

Counter-irritation, &c.

The subsequent debility, especially in cases of suppurative inflammation may call for tonics, or even stimulants, with generous diet, &c., while certain cases will even require such treatment from the beginning.

The **febrifuge treatment** comprises no violent measures of any kind ; the chief indications are to—

Allay the heat and dryness of various parts of the body.

The Tegumentary and mucous surfaces.

To favor the removal of excreta, &c.

These are accumulated in unusual amount in the blood and organs. For these purposes we use :

Moderate Laxatives.

Saline Diaphoretics.

Cold drinks.

Tepid ablutions.

The **Supporting Treatment** is that adapted to states of prostration and debility, for this purpose tonics and stimulants are used, along with nourishing food. The remedies chiefly employed for this purpose are alcohol, ammonia, ether, opium, camphor, turpentine, capsicum, &c.

General weakness of an animal occurs under three forms :

Exhaustion, depression, oppression.

Exhaustion.—We are familiar with the first as the effect of:

Over-exertion.

Loss of sleep.

Excessive purgation.

Following acute or chronic disease.

Depression is to be discriminated from exhaustion as resulting, not from expenditure or waste of the material or forces of the body, but from interference with their normal activity by some disturbing cause.

Oppression is the result of another form of obstruction of the functions of the animal economy.

Exhaustion and depression have their chief seat in the nerve-central sources of dynamic force. Oppression, in the circulation of the blood, or in some subordinate organs or functions.

Serious degrees of oppression occur in some cases of visceral congestion, particularly of the lungs or brain, and in violent spasmodic affections of the alimentary canal, with constipation of the bowels. Uræmia, from inaction of the kidneys, presents another cause of oppression, in which even a fatal result may occur.

Counterfeit debility or oppression thus may occur in:

The first stages of all acute diseases.

The febrile state.

Indigestion of an acute kind.

Congestion of the lungs or brain.

Obstruction of the bowels, uræmia.

These different lesions; and their appropriate treatment, will be found in another part of the work under their proper heads.

Depression is exemplified in the states produced by:

Severe injuries, extensive burns.

Sudden frights or terror.

Withdrawal of nourishing food, and semi-starvation.

Intense toxæmia.

Spasm of the diaphragm, &c.

In all of these conditions stimulation is absolutely required, in greater or less degree, always bearing in mind the probability of reaction, and avoiding as far as possible the exaggeration of this reaction into fever.

The **antidotal treatment** can only be glanced at here. Where animals are poisoned the specific poison requires a

specific antidote. The simplest kinds are included in such substances as :

White of eggs (albumen).

Glycerine.

Charcoal.

Lard.

In the case of corrosive and irritant poisons, demulcents may be given to sheathe and protect the mucous surface of the alimentary canal.

The **alterative treatment**.—A large and important class of diseases appear to depend upon some morbid materials in the blood, which induce such diseases as rheumatism, eruptive fevers, the various skin diseases, typhoid fever in horses, &c. They include the following remedies, as :

Alteratives	{	Calomel, antimony, iodine.
		Iodide of iron, cod liver oil, sulphur.
		Arsenic, iodide of potassium.
		Salts of silver, zinc, copper and other.

Counter-irritation is a measure of treatment of great service, especially in the later stages of inflammation, or in cases unattended with much vascular excitement. This is very serviceable in the second stage of bronchitis or pneumonia, but in all other cases is highly injurious; for they act as co-irritants, and only aggravate the inflammation which they are intended to cure. Hence they should never be employed until the vascular excitement has subsided.

Counter-irritants should be employed as near the seat of the disease as possible. Before their application the skin should be well washed with soap and water, and the hair, when long or thick, neatly clipped off with a scissors.

The **actual cautery**, or hot iron, is very much used in veterinary practice as an immediate and powerful counter-irritant. It is generally applied at a full red heat, and the higher the temperature the less is the pain attending its application. Besides being applicable to the same uses as vesicants, it is employed for many of the purposes of caustics.

The effects produced by the hot iron are almost instantaneous. The first result of its application is the carbonization of the hair with which it comes in contact; this is indicated by the peculiar odor of the chemical action which has taken place. The second result is the destruction of all the tissues with which it comes in contact; this is accomplished by the absorption of the watery elements of the blood. Its beneficial effects in cases of diseased joints, ligaments and tendons,

in which it is so often used, depends on its exciting a superficial inflammation, and not, as it was once currently believed, on its forming a permanent bandage around the parts. Indeed, though the skin for a short time after the operation is corrugated and tightened, it soon resumes its natural elasticity, and does not embrace the subjacent parts more firmly than in health. The firing of healthy hurts, with the popular idea of strengthening and bracing them up, is now deservedly discountenanced, for the apparent benefits resulting from the firing are now well known to result, not from the operation, but from the rest which it necessitates. It is a prevalent idea that the efficiency of counter-irritants is to be measured by the amount of discharge which they induce, but this is by no means a general rule, for the amount of the counter-irritation and of the discharge do not bear a consistent relation to each other, and the only accurate method of judging of the power or value of any counter-irritant is by the intensity and continuance of the inflammation it excites. The agents which decompose tissue, beside the hot iron are :

Sulphuric acid.

Nitric acid.

Nitrate of silver, &c.

These and other caustics act in a similar manner. The milder counter-irritants are called rubefacients and vesicants, which are treated of elsewhere in this work.

EXTERNAL REMEDIES CHIEFLY USED IN VETERINARY PRACTICE.

Refrigerants.—Agents which diminish the morbid heat of a part :

Solution of acetate of lead.

Solution of diacetate of lead.

Common salt.

Cold water.

Discutients.—Agents which repel indolent tumours :

Hydrochlorate of ammonia.

Camphor.

Compounds of Iodine.

Soap Liniment.

Rubefacients.—Agents which cause redness of the skin without blistering :

Liniment of ammonia.

“ tar.

Liniment of turpentine.

Tar, pitch and vinegar.

Vesicants.—Agents which cause blistering :

Cantharides.

Euphorbium.

Croton oil.

Nitrate of mercury (citrine ointment).

Mylabris.

Potasso-tartrate of antimony.

Hot water.

Caustics.—Agents which decompose tissue :

Sulphuric acid.

Nitric acid.

Hydrochloric acid.

Bichloride of mercury.

Nitric oxide of mercury.

Chloride of antimony.

Chloride of zinc.

Nitrate of silver.

Sulphate of copper.

Hot water.

Digestives. — Agents which induce suppuration in wounds :

Black Hellebore.

Liniment of turpentine.

Ointment of turpentine.

Detergents.—Agents which cleanse wounds of the skin and excite them to healthy action :

Acetate of copper.

Creosote.

Liniment of sulphate of copper.

Ointment of ammoniac-chloride of mercury.

Ointment of nitrate of mercury.

Sulphur and its compounds.

Astringents.—Agents which diminish discharges from wounds :

Alum.

Armenian bole.

Carbonate of Zinc.

Oxide of Zinc.

Matico.

Antiseptics. — Agents which destroy putrescence in wounds :

Charcoal

Chloride of zinc.
 Chlorinated lime and soda.
 Nitrate of potassa.
 Sulphate of soda.
 Yeast, &c.

Agents which excite the healing process in wounds :

Aloes (tincture).
 Collodion.
 Myrrh.
 Oil of tar.
 Resin.
 Solution of sulphate of copper.
 Solution of sulphate of zinc.

Emollients.—Agents which soften and relax parts.

Fomentations.
 Glycerine.
 Lard.
 Olive oil.
 Palm oil.
 Poultices, &c.

Disinfectants.—Agents which in various ways cleanse the atmosphere of houses and stables :

Carbolic acid.
 Chloride of lime.
 Chloride of soda.
 Sulphite of soda.
 Potash, soda, lime, charcoal.
 Sulphurous acid and others.
 McDougal's disinfectant consist of—
 Sulphite of lime.
 Sulphite of Magnesia.
 Carbolate of lime.

Condy's fluid, both of these are extensively used in stables :

Solution of permanganate of soda.
 “ “ “ potash.

Forty parts of water added to six or eight parts of this solution is sufficient.

LINIMENTS AND OINTMENTS IN GENERAL USE.

Ointments are prepared for external use, when lard or oil are the excipients, they may be easily mixed with the several ingredients in an ordinary mortar, but when wax or

resin is used, it must be melted over a slow fire; the other constituents are then added, and the whole mass stirred until it has acquired the proper consistence.

The ointments should be kept in well closed pots or jars, and covered with strong paper or oil silk. The instrument for dispensing it is called a spatulæ.

Cerates are ointments containing wax, and

Liniments, ointments containing oil, and of a mediate consistence between ointments and oils.

Blistering ointments or liniments must never be applied in any disease (under any pretence) while there is active inflammation accompanied with constitutional fever. If this piece of stupidity is resorted to it will only aggravate the symptoms they intend to cure. These remedies are only useful in the later stages of inflammation, call chronic inflammation. These cautions apply to all diseases, whether it be inflammation of the lungs, ringbone, or spavin.

The following preparations will be found of great efficacy and value for the several diseases indicated:

Liniment of Ammonia: Take of—

Solution of ammonia, one ounce.

Olive oil, two ounces.

Mix and agitate together.

The simple liniment is chiefly used as a counter-irritant in sore throat, rheumatism, sprains, chronic tumors and bronchitis. A stronger liniment may, if desired, be made thus. Take of—

Oil of turpentine,

Olive oil,

Solution of ammonia.

} Two ounces of each.

Shake the ammonia and oil together—then add the other.

Liniment of camphor. Take of—

Camphor, one ounce.

Olive oil, two ounces.

And dissolve them.

This preparation is often used for deep seated inflammations and swellings of the glands, if required to be more powerful, add oil of turpentine.

Or, this, take of—

Camphor, one ounce.

Rectified spirit, four ounces.

Olive oil, one pint.

Solution of ammonia, two ounces.

Dissolve the camphor in the spirit; shake the oil and ammonia together, then agitate the whole together.

Liniment of sulphate of copper. Take of—

Sulphate of copper, one part.

Tar or molasses, four parts.

Reduce the sulphate to a fine powder, mix together, heat them over a slow fire, stir them together until the whole is of a red brown color.

This is a useful digestive ointment in all cases of canker, thrush, as well as foot rot in sheep.

Mercurial liniment (compound). Take of—

Mercurial ointment, two ounces.

Camphor, one drachm.

Creosote, one drachm.

Liquor ammonia, two ounces.

Linseed oil, six ounces.

This is a capital remedy for all skin affections of the domestic animals (but must not be used too often), it is highly beneficial also in chronic indurations and enlarged glands.

Liniment of Croton oil. Take of—

Croton oil, one part.

Glycerine, or

Soap liniment, or

Oil of turpentine.

} Eight parts of any of these.

This liniment is more useful in cattle practice, as a counter-irretant in bronchitis, pneumonia, plurisy, chronic enlargement of the glands, and lastly in cases of chronic rheumatism of the joints.

Wash for lambs. Take of—

Oil of tar.

Naphtha.

Soft soap, three pounds.

Sulphur, one pound.

} One pint of each.

Stir and dissolve in four gallons of boiling water. Add then as much cold water as will make altogether 25 gallons, this will dip 25 lambs.

Wash for sheep. Take of—

Acidun arsenicalis, pulverized.

Soft soap.

Carbonate of potassium.

Water, 14 gallons.

Sulphur, 4 ounces.

Hellebore root, 2 ounces.

} Six ounces of each.

Boil the several ingredients in a portion of water until the arsenic is dissolved, then add the rest of the water.

Liniment for burns and scalds—

Solution of lime. } Equal parts.
Olive oil. }

Lime poultice. Take of—

Solution of chlorinated lime, two ounces.

Linseed meal, four ounces.

Boiling water, eight ounces.

This poultice does good service in cases of unhealthy wounds and ulcers.

Wood's wash, valuable, for cuts and wounds. Take of—

Tincture of arnica, three ounces.

Aloes, two ounces.

Glycerine, one ounce.

Collodion, five drachms.

Egyptian ointment, for quittons, corns, thrushes and fistulas. Take of—

Honey. } One pint.
Vinegar. }

Solution of sulphate of copper, one pound.

Boil slowly the three substances, over a slow fire, keep them well stirred, when of red color take them up and put away in china jars.

For scab and mange. Take of—

Carbolic acid, seven ounces.

Sulphur, two ounces.

Mix thoroughly and apply to the animal.

Ointment, for grease, ringworm and skin affection, stimulant and detergent, usually called citrine ointment.

Citrine ointment. Take of—

Mercury, 4 ounces.

Nitric acid, 10 ounces.

Lard, 15 ounces.

Olive oil, 32 ounces.

Dissolve the mercury in the nitric acid, with gentle heat, melt the lard in the oil while hot, add the mercury to acid while hot, mix all together well in a large vessel. If it does not froth up increase the heat until it does, and keep stirred until cooled.

Camphorated oil. Take of—

Camphor, one pint.

Olive oil, four pints.

Discutient and Anodyne, for tumors, sprains, bruises, &c.

Liniment for tetanus or lockjaw. Take of—

Turpentine.	}	Two ounces of each. Mix.
Hemlock		
Oil of organum.		
Oil of cider.		

Rub this preparation well on the parotid glands and jugular vein.

For affections of the eye the following wash will be found useful. Take of—

Wine of opium.	}	Two ounces of each.
Rose water.		

Sulphate of zinc, half scruple.

Shake them together and apply gently to the eyes.

Ointments, chiefly used in horse practice.

Blistering ointment. Take of—

Black pitch, four ounces.

Resin, four ounces.

Wax, three ounces.

Oil, twelve ounces.

Cantharides, pulverized, five ounces.

Euphorbium, two ounces.

Melt the pitch, rosin and wax together, then add the oil, afterwards the powder, with care.

Hoof ointment—

Yellow wax.

Lard.

Sweet oil.

Venice turpentine.

Honey.

}	Equal parts.

First melt the wax, lard and oil together, then add the turpentine and honey. Stir till cold.

Hoof liquid—

Oil of turpentine, four ounces.

Wood tar, four ounces.

Whale oil, eight ounces.

To make a solution of aloes. Take of—

Barbadoes aloes, one pound.

Carbonate of Soda, half pound.

Water, one gallon.

Take seven pints of the water, break up and dissolve the aloes in the water, by putting them on a fire not too hot, when cool pour off. Dissolve the soda in the other part of water, after heating, then mix both together and cork up.

Chronic cough mixture—

Barbadoes aloes in powder, two ounces.

Digitalis, one ounce.

Common mass, thirteen ounces.

Beat together to make a mass. The dose is one ounce.

To disinfect a stable : Burn sulphur on an iron plate, or use chloride of lime, or crude carbolic acid.

Burns and scalds.—An excellent remedy consists of a coating of linseed oil and white lead mixed together ; also the following : Take of—

Hydride of lime.	} 45 grains of each.
Chloric ether.	

Glycerine, five ounces.

Mix.

Cathartic for a dog. Take of—

Castor oil, three parts.

Syrup of Buckthorn, two parts.

“ poppy, one part.

Dose, four to eight fluid drachms, according to the size of the animal.

DISEASES OF THE DIGESTIVE ORGANS.

These include the LIPS, TONGUE and TEETH, the PHARYNX, the ESOPHAGUS, the STOMACH, the large and small INTESTINES, the LIVER and other GLANDS, and the PERITONEUM.

INFLAMMATION OF THE TONGUE AND MOUTH.

Cause.—This is generally the result of a most pernicious practice of some horsemen of giving Gin and Turpentine (for some supposed disease) in their undiluted form; or oftener, perhaps, by the administration of very potent medicines in their pure state. The fiery liquid is poured down the animal's throat heedless of consequences, and it is well if the mischief does not extend from the throat to the stomach, producing gastritis. The prescriptions of the Veterinary Surgeon should be strictly followed, or much damage may ensue.

Symptoms.—There is an unusual redness of the tongue and mouth, the lips are constantly in motion up and down, and saliva in large quantities flows from them. Now and then smacking of the lips is heard. After some time the tongue is inflamed and swollen. Food is rejected, as the animal is in no condition to masticate or swallow.

Treatment.—Smear the tongue and lips with the following: borax pulverized one ounce, glycerine or honey six ounces. If the stomach be suspected of injury from poison contained in those abominations called condition powders, take of sulphuric ether two ounces, tinct. of opium two

ounces, linseed oil half a pint, for one dose. Cold gruel may be given instead of the oil if preferred. Let the food only consist of cold gruel and boiled roots. Laceration of the tongue is not uncommon: violence in many shapes produce if they do not divide it. When a brutality of this kind is inflicted, experience proves that the best treatment is to take two quarts of tepid water, put into it one fluid ounce of carbolic acid, and the creature will find much relief in bathing his tongue in it; the quantity of each may be doubled if necessary.

Cattle sometimes while grazing get thorns stuck into the back part of the tongue or cheek, causing discharge of saliva and inability to eat, which must be seen to and extracted.

ULCERATED AND IRREGULAR TEETH.

Cause.—The former is chiefly produced by small stones of various sizes getting mixed with the oats or other feed (through the negligence of stablemen), and, of course, one or more of the molar teeth become permanently injured by the terrible wrench of the powerful jaws of the horse. Powerful acids given by ignorant persons in some rare cases induces disease of the teeth.

Symptoms.—There is considerable tenderness and swelling of the face, the food lodges in the hole formed and putrifies. There is great difficulty in chewing, and the breath smells badly. But in most cases the evil does not stop here, after some time the tooth injured wears away, and the opposing tooth having no attrition, grows to an enormous size, grates against the gum, and is followed by a discharge, which sometimes has been mistaken for glanders. Any person interested in the subject may see such a specimen on exhibition at the New York College of Veterinary Surgeons.

Treatment.—Many remedies have been tried, such as stuffing the tooth with gutta percha and other substances, but it is always the best plan to have the diseased tooth re-

moved by a forceps made for that purpose, and a piece chiselled off the opposite molar. Irregular teeth are the cause of much pain to animals; as the horse gets aged the outer edges of the upper and the inner edges of the lower molars get sharp as lances, cutting the gums and cheek every time the animal attempts to eat. The consequences is a constant dribbling of saliva and quidding of the feed. This state of thing is produced by contraction of the lower jaw. The only treatment is to file off the edges of the teeth with a proper instrument made for that purpose. It is best to rasp off a little at a time, even should it take a week. The mouth should be kept open with a balling iron, and sufficient caution used not to wound the cheeks or tongue.

LAMPAS.

Cause.—This fancied disease occurs only in young horses while cutting their teeth.

Symptoms.—During this period swelling of the ridges of the palate above and behind the incisor teeth is quite common. There are slight febrile symptoms, especially when the bridle teeth or tushes begin to show themselves, the parts become highly vascular and enlarged, which prevents the animal from eating his food.

Treatment.—No severe measures are necessary, such as burning or tearing the palate. Simply scarify the enlarged ridges with a thumb lance or pen knife, not too deeply, and apply a wash of alum water; give the animal soft food, boiled roots, bran mashes, or soaked grain.

STOMACH STAGGERS OR ACUTE INDIGESTION.

Cause.—There is generally but one origin of this disease, and that is overloading the stomach after long abstinence; this organ is small in proportion to the size of the horse, but the digestive apparatus provides for uninterrupted digestion; sometimes it is produced by eating

hurriedly, after severe work, food to which the animal has not been accustomed, as corn, vetches, clover, &c. The function of digestion being arrested leads to formation of gas, especially if much water has been taken; coarse, bulky food, if the stomach is out of order, also produces indigestion.

Symptoms.—As the stomach is distended with food, so is the belly with gas. There is as a consequence colicky pains, torpidity of the bowels, dullness in the sleepy stage, and a staggering gait. This condition of the organs, if not relieved, soon ends in inflammation of the bowels or rupture of the stomach. The other signs are a quick pulse, labored breathing, the mucous membrane blanched, the ears and tail motionless; at other times the animal attempts to get relief by sitting on its haunches. Sleepy and mad staggers are only different stages of the same disease; in the former the brain is oppressed by sympathetic or reflex action, while in the latter it is congested, producing phrensy. There is also unnatural brightness of the eye, the skin is bathed in perspiration, and the animal sometimes tries to bore his head against the wall. When the disease has progressed thus far, remedies of any kind are no use.

Treatment.—Bleeding will do no good. For this case take of linseed oil one pint, croton oil twenty drops, or give the horse six drachms of solution of aloes with two ounces of oil of turpentine with one drachm of calomel. Beside either of these doses, much may be done by fomenting and rubbing the belly with hot water. Injections also containing soap, salt, or tobacco smoke should be used every hour. However, should no relief be obtained, repeat the dose in a few hours. If there should be great stupor, a drink of whiskey with plenty of ginger will do good service. As the animal recovers, great attention to the food will be required; light food in small quantities at intervals of four or five hours will prevent a recurrence of the disease.

CRIB BITING.

Cause.—Acidity of the stomach, arising from sameness of food—oats and hay continuously without any change to mashes or green food. In other instances the number of hours at one time some horses are allowed to pass in the stable is an exciting cause; the animal becomes restive and irritable, and resorts to this vicious pastime. Hot, unhealthy stables, water which has remained for hours absorbing air and other gases in the stable, given to the animal, are also potent influences to crib biting. Young mares particularly are subjects of this vice. In many instances it is learned from some old stager who is well up in the business, and nearly always gives rise to heartburn and indigestion. Thus it is perceived how crib biting is at once both a cause and an effect of indigestion, sadly interfering with a horse's endurance, and constituting unsoundness.

Symptoms.—Licking the stable walls or any cool substance, retraction of the upper lip, stretching the nose, generally precedes the act. Cribbing is not exactly biting; the animal merely rests his upper incisors on some firm substance, stretches his neck and body backwards, and, after much effort, a portion of gas is emitted. A cribber is easily known by the worn and ragged appearance of the outer edges of his teeth.

Treatment.—Place a large piece of rock salt and chalk near the animal's head. Let the feed be damp and sprinkled with a little magnesia for a few days. Let the atmosphere of the stable be well ventilated. Or, instead of the magnesia, give half an ounce of ginger and gentian twice a day. To hinder cribbing, remove the rack and place his food on the ground in some such way as to make this habit impossible.

SPASMODIC COLIC, BELLY ACHE, ETC.

Cause.—This is the more dangerous form of the disease, and must be carefully distinguished from windy colic, also

called flatulent colic, or tympanites (from tympanum, a drum). They are easily diagnosed if the history and symptoms of the patient are attentively watched. A variety of causes will induce this disease: fast driving, drinking cold water after severe exercise, change of food from dry musty oats to new grass, constipation, a fatiguing journey, and at other times when no sufficient cause can be assigned. The muscular coat of the small intestines is commonly the seat of the disease, they become powerfully contracted, and spasm or gripes is the result; the contraction of the tissues forces the blood into parts where no disease exists. The large intestines are also the seat of disease in other instances; but whatever be the cause, it is a most painful and dangerous affection, and, unless timely and proper treatment be applied, will speedily prove fatal. Horses that are overworked and badly managed are always good subjects for colic, and especially old and debilitated ones. Inability to vomit nauseating food, and offending matter, like the dog, renders the solipede more subject to this disease than cattle or dogs. The great and sudden changes in the temperature and humidity of the atmosphere at different seasons of the year makes this disease more common in the States than in Europe. Every farmer, horseman and stable keeper should know how to manage a case of this kind, in the absence of a qualified surgeon.

Symptoms.—The attack is mostly sudden—while the animal is feeding, standing in the street, or driving—it may occur at any time or place. First stage, general uneasiness, the nose turned to the flank, the forefoot pawing the ground, the hind foot raised towards the belly, the breathing is hurried during each spasm, the pulse rises from 70 to 80 beats per minute. During the next stage these symptoms are more violent; at times the animal seems to get relief for an instant, but the spasms come on again with renewed violence; the poor beast is in the greatest agony. All self-control is now lost; he leaps up and dashes himself against

the ground, careless of consequences; this may be repeated several times. The shock to the system is fearful. The poor beast now rolls over on his back, striking out with his upturned feet; he now rises on his haunches, and rolls over successively until death ends his terrible agony. Several of the signs here enumerated are always absent in Windy or Flatulent Colic, which makes a most important distinction, as the treatment and recovery depend on a correct diagnosis. Slight colicky pains are symptoms connected with many other diseases, although not of such a severe kind as in Spasmodic Colic. These will be noticed in the proper place.

Treatment.—No disease I know of yields so readily to timely and proper remedies as this, nor any that proves fatal in fewer hours if badly managed or neglected. Some persons give a large dose of aloes in the shape of a ball, but it is highly probable the animal would be some time in the rendering vat before it would have time to operate. On the first appearance of the disease remove the horse into a large box stall, if possible, in which there is plenty of straw. As soon as a spasm is over, and the beast is a little quiet, this is the only time we can hope to administer the medicine. The following remedies I have never known to fail in a genuine case of colic (*per se*): Take of

Chloroform one ounce,	} For one dose.
Tincture of opium one ounce,	
Sulphuric ether one ounce,	
Linseed oil eight ounces,	

No proprietor of horses should be without a pint each of these valuable medicines in his stable for emergencies. Besides this dose through the mouth, it will be necessary (for those who know how) to inject a dose of morphia under the skin. This is easily learned. Procure a hypodermic syringe sufficient to hold two drachms, insert its sharp point under the skin anywhere in the middle of the side of the neck. Two drachms of Magentas solution of morphia is a sufficient dose. In most cases it will not be necessary to

repeat the former dose; however, if the symptoms do not abate give another. A blister of strong liquor ammonia with six times its bulk of water put on a cloth and held up to the animal's belly has sometimes done good, but great care is needed lest blistering and dissolving the skin should follow; also, enemata of turpentine one pint, put into one quart of soap water, has done good service. However, I would recommend no treatment except the first-mentioned, for they are nearly infallible remedies.

FLATULENT COLIC, WINDY COLIC, TYMPANITES.

Cause.—Impaired digestion, especially in old debilitated horses, loss of tonicity of the stomach, loss of nervous influence, overwork, gorging on new grass, sudden and great changes in the heat of the weather, any and each of these have produced tympanites. A large feed after a long fast, in fact, anything that arrests or impairs the digestive powers. Animals in their wild state are not subject to this derangement of the system. I have often watched bison and buffaloes filling themselves with new grass until they could not stand; the respiration was so hurried that every moment I expected to see them expire, but it seemed to do them no harm. Retention of provender in the stomach a longer time than nature has assigned leads to most unpleasant conditions; fermentation begins, and there is a constant formation of gas, some say of hydrogen, and thus tympanites is the result.

Symptoms.—Before the swelling is noticeable, the animal behaves in a very fidgety manner, hangs his head, and generally walks in a circuitous way in his stall. At intervals he stands motionless, except that the foot paws the ground, the pulse is feeble but high. There is a very sleepy look about him. After some time enlargement of the abdomen is observed. Here it may be well to state that in windy colic there is not that violence of action that we expect to find in spasmodic colic, the animal does not sud-

denly dash himself against the ground, neither does he roll over on his back repeatedly. There is considerable caution in the animal's attempts to lie down (if he does, indeed, lie down at all), which is very seldom in windy colic.

It is well to remember also that in spasmodic colic the animal is well, or dead in a few hours, whereas in windy colic the animal may be distressed for three or four days, until relieved. In addition to the preceding symptoms, the breathing becomes labored, the eye almost fluid, the diaphragm is pressed against the lungs so as to injure the breathing; the heart flutters, and death soon ensues if proper treatment is not applied.

Treatment.—As soon as the case is correctly diagnosed, take of liquor ammonia three to four drachms, and put it into half a pint of linseed oil; as soon as this is horned down the animal's state will be a good deal better. Besides giving the medicine, a dirty job must be done next, and that is to backrake the beast. Let the hand be well oiled and the fingers compressed together at their ends, and introduced gradually up the rectum, and its contents raked out on the floor. After this is done, throw up an injection of some quarts of castile soap suds; if it comes back in the face of the surgeon, so much the better. In very many cases this part of the treatment alone has relieved the animal. No food or water is to be given until the animal is cured. However, should the case prove a protracted one, and the gas not only fill the stomach, but intestines, the following treatment must be followed as well as the preceding: Three or four drachms of chloride of lime in half a pint of linseed oil must now be given; the hydrogen gas unites with the chloride, and form the hydro-chloric acid. Then, after sometime, give one or two balls of animal charcoal mixed with glycerine, say six to eight drachms of the charcoal for one ball, to absorb the gas. In some very severe and obstinate cases, the left side has to be punctured in order to make an exit for the gas, but this may be only one in a thousand.

DIARRHŒA.

Cause.—Quantities of crude indigested food of any sort, or swallowing any foreign substance, will produce this disease. Horses brought from one part of the States to another, in which water of a very different composition from that previously used, given to animals, has been known to induce scouring for some time. Certain breeds of horses under the slightest exertion are troubled in this way.

Diarrhœa also follows from irritating and impure matters in the blood; also from eating large quantities of green food, and lastly, it comes on occasionally as a sequel to some debilitating disease.

Symptoms.—Mere looseness of the bowels without straining is not to be confounded with diarrhœa, in which there is nearly always some substance impacted in the intestines, unless in the cases already excepted. Constant expulsion of liquid fæces from the bowels (not always in large quantities), is nature's own remedy for driving out the noxious substance from the alimentary canal. The evacuation contains mucus, bilious and fæcal matters, in which it differs very much from dysentery, (in which disease blood is also evacuated).

Treatment.—Active treatment in ordinary cases is not advised. It is best to watch the symptoms, and help nature in doing its own work. Should there be great straining with little evacuations, her indications are there for laxative remedies to assist her. In this case, take of aloes four drachms, gentian four drachms, make into a ball of one dose. An equal amount of ginger may be given instead of gentian. Should there be continued purging from relaxation of mucous lining of the intestines after the expulsion of all offending substances, here soothing remedies are to be given. Take of ether and laudanum one ounce, with twenty grains of tannin, put them into a pint of gruel, or flax seed tea, for one dose for the horse. The provender

should be changed, and consist of bruised oats and good hay, and very little water. No roots or new grass. The above dose may be given once or twice a day, if required.

DYSENTERY, COLITIS.

Cause.—Any acrid or poisonous substance, as croton oil, arsenic, and quack condition powders, have been known to set up inflammation of the intestines. Long exposure to cold, hard work and musty feed are also potent means to inflammatory purgation.

Symptoms.—The great abdominal pain in the beginning of this disease is one symptom that might lead an inexperienced person to mistake this disease for colic. Violent evacuations from the bowels containing blood, mucus, lymph, (and should it proceed to ulceration), pus, these symptoms mark the distinction between this dangerous complaint and diarrhœa. There is also in this disease excessive thirst, an offensive stench from the watery fluid discharged from the bowels. In addition to these symptoms there is an intermittent pulse, the face is haggard looking, and there is slight tympanites. These symptoms of the complaint if unrelieved speedily end in death.

Treatment.—During the first stage of the disease give the following:—

Sulphuric ether one ounce,	} For one dose.
Tincture of opium “	
Tincture of catechu “	
Linseed oil six ounces,	

It will be necessary also to keep the quarters free from the filth of the evacuations, tie up the tail, and also give injections of linseed tea. Should the animal improve on the above treatment, let the food consist of boiled oats, linseed tea and gruel. If the bowels are constipated for some time after recovery it is of no consequence or ground for alarm.

INFLAMMATION OF THE BOWELS, ENTERITIS.

Cause.—Protracted cases of colic or stomach staggers sometimes end in inflammation of these delicate organs; overloading the stomach with old indigestible food frequently acts as an exciting cause of enteritis. In other instances it is brought on by sudden chills after exhausting work, when an animal is perspiring very freely. External violence, such as kicks and blows, has given rise to inflammation of the large or small intestines. Besides these, there are other predisposing causes which are very obscure in their origin. Occasionally it occurs as a sequel to epizootic diseases, such as influenza, &c.

Symptoms.—The first symptoms very much resemble colic, only of a much milder type. The horse has occasional shivering fits, the nostrils are dilated, and the breathing increased; the animal walks round his stall and pretends to lie down, but he seems very cautious and particular what spot he chooses to rest on. At times he will roll over and try to ease himself by rolling, kicking or plunging in a very methodical fashion; the pulse from being firm becomes quicker and smaller, or wiry, as it is called. Pressure on the abdomen gives great pain, while in colic it relieves; the animal turns his head to his flanks continually. Should the case yield to treatment the bowels begin to act, and there is copious urination.

Treatment.—When the case is seen in time, and especially if the animal is young and in good condition, and the pulse firm and distinct, do not hesitate to bleed to the extent of four or five quarts, by so doing we lessen the chances of exudation, and balance the arterial system. If the bowels are confined don't give aloes. Take of linseed oil eight ounces, tincture of opium two ounces, sulphuric ether two ounces, and gently horn it down the animal's throat. Much good can be done also by repeated injections of linseed tea, in which there is two ounces of opium. An application of a thin coating of mustard to the belly, or

cloths wrung out of hot water will also do good service. If the bowels are operated on by the oil, and all hard fæces are ejected, it is a very favorable symptom. As the horse improves the greatest care is required in the selection of food. No bran, hay, or mashes is to be given on any pretence. Cold gruel mixed with an ounce each of tincture of opium and sweet spirits of nitre may be given every couple of hours. As convalescence proceeds, boiled roots, scalded oats, in very small quantities at one meal is the proper diet for a horse recovering from this tedious and very dangerous disease. Good nursing is more requisite in this disease than in any other with which the horse is afflicted.

BOTS, WORMS, ETC.

Cause.—The former of these pests are sometimes found in the stomach, while the latter are occasionally met with in the cæcum, colon and duodenum of the horse, but it must be confessed that the injury done lies more in the fancies of horsemen than in the intestines of the animals supposed to be afflicted with them. However, in rare instances, where animals are allowed to graze for a long time in low, wet meadows, and marshy grounds, worms, in large quantities, find their way into the stomach, and occasion some trouble. Bots do little harm to the stomach, unless in immense numbers, so as to interfere with digestion.

Symptoms.—A dull untufted coat, irritable bowels. The dung light colored and unhealthy looking. Occasionally there is expelled quantities of mucus. There are also colicky pains and a general thriftless appearance in the animals so affected. Convulsions resulting from worms is not seen once in a lifetime.

Treatment.—For bots and worms of all kinds, the remedies are much the same. Occasionally they are expelled in large numbers by the effort of nature without any medicine. However, much good has been accomplished

by the following prescriptions:—Take of aloes three drachms, asafœtida two drachms, rubbed down in warm water. When cold add one ounce of turpentine and ether. It is best given to the animal fasting, say three times a week. It is advisable also to change the feed to boiled barley, mashes, carrots, and green food, if they are in season. Another valuable remedy is the following:—Take of asafœtida two drachms, calomel and savin a drachm and a half each, with thirty drops of oil of male-fern. Let these ingredients be mixed with treacle and linseed for a dose at night. The next morning give a purge. In addition to these medicines let the animal have plenty of salt in his feed.

INFLAMMATION OF THE LIVER, HEPATITIS.

Cause.—This complaint in its chronic form is not frequently seen in horses, acute hepatitis is one of the rarest of diseases in our practice. The chronic form arises from high feeding and idleness. I scarcely know whether overwork or no work, without exercise, does most mischief to an animal. Brewers horses fed upon the refuse of the malt-house may look in fine condition for some time, and yet their liver be in such a diseased state as to produce inflammation of this gland. The unnatural stimulation resulting from that kind of food is certain (if persevered in for any length of time) to end in chronic hepatitis. Horses kept for show and not for work are generally highly fed and well stalled; the nourishing food without exercise makes great demands on the liver for the secretion of bile, and this organ continually overworked becomes congested. This engorgement of blood produces the inflammation which we call hepatitis. Horses in the Southern States, and in all tropical climates are more liable to this disease than those of northern latitudes.

Symptoms.—The indications of this disease are not generally observed until permanent damage is done. The

animal is dull and listless. There is no sprightliness in his eye or activity in his movements. The appetite is very capricious and over-nice; there is constipation of the bowels, coolness of the extremities; the dung shows that the food was imperfectly digested; the urine is scanty and high colored, and the pulse has a heavy beat. Besides these symptoms, the lining membrane of the nostrils is blanched; occasionally the eyes have a yellow tinge, and the right side shows tenderness on pressure, but these signs are not always present. The febrile symptoms are not very prominent. The temperature, as shewn by thermometer, will be about 101 degrees.

The only case of this kind that came under my notice in this city was a splendid bay gelding, about seven years old, and sixteen hands high, the property of a prominent editor of various periodicals. I regret to say that I was entirely ignorant of the history of the animal previous to his ownership by this gentleman. The first thing noticeable about him was the nicety and daintiness of his appetite, although at times he seemed to eat a full share of feed. Soon after such a meal he would have attacks of spasmodic colic, rolling over on his back and kicking away for several minutes; these were only the accompaniments of the disease, besides others yet to be mentioned. During this time the pulse would rise to 50 or 60 beats per minute, and the temperature to 101 and 102 degrees. There was obstinate constipation of the bowels; the fæces (dung) came away in very small quantities, dry and hard, and generally coated with mucus, shewing defective digestion; the urine scanty and high colored; the legs were always somewhat cold and the eye prominent and mild looking.

The pulse was not feeble and wirey as in inflammation of the bowels, and never rose above (if I remember right) 50 to 60 degrees, the temperature generally registered about 101-102 degrees; neither was the respiration very much above the normal standard; so that on the whole the febrile

symptoms were not very well marked, as in some inflammatory disorders.

One of the most remarkable performances of this animal was sitting with apparent satisfaction on his haunches like a dog ; this he would do when taken out for exercise, if urged to trot, or work of any kind. This case came too late to be successfully treated, as is commonly the fact in such obscure maladies. The post-mortem revealed impaction of the bowels, with solid matter that no medicine could possibly remove.

This obstruction was, no doubt, the result of the torpid and diseased state of the liver, which hindered the digestive organs from performing their work. An examination for soundness in this instance very possibly would deceive the most experienced veterinary surgeon, and shows the necessity for the buyer of a horse always to have the animal a few days in his custody previous to paying for him.

Treatment.—When the case is detected in time, let the animal have light nutritious food, plenty of exercise, or constant light work ; remove him from heated stables to some airy place. Plenty of bran mash or green food. The following medicine may also be given with advantage : Take of iodide of potassium two ounces, liquor potassae one quart, mix and give two table spoonsfull night and morning, in a pint of water.

DISEASES OF THE RESPIRATORY ORGANS.

We now come to a most important class of diseases, affecting the breathing apparatus, with which every stock raiser, farmer, stable keeper, and horsemen in general should be well acquainted.

The organs chiefly subject to attack are the nasal cavities, the larynx, the bronchial tubes, the lungs, and the pleura investing the lungs. Each and every one of these parts are at times the subject either of acute or chronic inflammation. The greater number of the organs of digestion, as well as the organs of respiration, are lined by a delicate tissue called mucous membrane. It is this membrane that is affected in nearly all of the diseases above mentioned. This is a fact worth remembering: for instance, inflammation of the mucous membrane of the nostrils is called "catarrh;" of the bronchial tubes, "bronchitis," and so on. A few words on inflammatory action produced on this membrane in particular will not be here out of place. Wherever this tissue is found the same effects are produced on it by stimulation, irritation, congestion, or inflammation.

A certain portion of mucus constantly moistens these surfaces in a state of health, but during disease it is altered both in character and amount. The general statement is, that when a mucous membrane is inflamed its secretion of mucus is at first arrested, then increased, and finally perverted in character.

A right understanding of these facts will simplify in a great measure a proper answer to the question so often asked in these cases, "What is the matter with the horse?" or a

correct diagnosis; it will lead also to correct treatment, and lastly, to the probable result of these diseases or their prognosis.

Very few diseases there are that inflammation does not accompany; but yet there are some, such as colic, diarrhœa, hernia, &c.

CATARRH, OR COLD IN THE HEAD.

Cause.—This disease is very common amongst young horses that are for the first time brought from the fresh, open country, and then immured in hot, filthy stables in our large cities. The hot and foul atmosphere of the close stalls in such stables seems to irritate and inflame the delicate tissue which lines the nostrils, as well as the other air passages of this animal. In very many instances catarrh results from long exposure to rain and moisture, while in other cases it is produced by the sudden changes of temperature which occur during the spring and fall of the year. Exposure to draughts, or stabling in damp ground, may also produce this disease.

Again, this disease is often brought on by putting horses to unusual and hard work, after which they are stabled in hot, badly ventilated stables. These, beside other causes, may excite and produce nasal catarrh.

Symptoms.—A general dullness and stupidity comes over the animal; the facial sinuses are clogged (or stuffed, as it is called); inflammation in its first stage has arrested the secretion that is usual in health. There is also loss of appetite. The nasal membranes are hot, dry, and sometimes tumefied. There may be also symptomatic fever, with chills or rigors, and a hard pulse, with difficult breathing. Next comes the moist stage, when there is a discharge from the nostrils of a thin character, generally accompanied by sneezing and weeping from the eyes. After some time it changes to a thick creamy fluid, which shows that pus has formed and mixed with the abnormal secretion.

Should the disease be neglected for some time after these symptoms show themselves the inflammation may extend down to the larynx and bronchial tubes; then it is called nasal laryngitis. Or it may produce a chronic cough, together with roaring or whistling, which is caused by alteration of the structure of the larynx.

Treatment.—Bleeding is not to be thought of. Steaming the nostrils has been tried, but it is not good; as soon as matter begins to run from the nostrils the animal is temporarily relieved. Place the animal, if possible, in a comfortable, cool stall; put on light, warm clothing; one or two mashes, or scalded oats will not be out of place. If the legs are cold bandage them. If the case is seen in the first stage, take of belladonna and camphor one drachm each; give it in the form of a ball, or smear it on the tongue. If the febrile movements are well marked take of spirits of ammonia and ether two drachms each; put them into linseed oil, gruel, or water for one dose; eight ounces of the oil is sufficient. Both the ball and the fluids may be given mornings and evenings. Should it not be convenient to procure the ammonia or ether, one ounce of saltpetre dissolved in a pail of water will do very well. If the throat is sore or the cough troublesome, then apply a mustard plaster.

The best method of applying mustard is to make it pretty thick with warm water, and rub it directly around the throat without putting it on a cloth of any kind. When it is spread on anything it is very difficult to retain the cloth in its place.

As the patient improves he will require tonics and stimulants to build up his strength by improving the appetite. For this purpose take of carbonate of ammonia two ounces, gentian two ounces; make these four ounces up into eight balls; roll each up in very thin paper, and give one night and morning.

Nasal gleet is a chronic form of catarrh. In this case the discharge may be from one or both nostrils, but it is always very offensive. The stench is intolerable. Pus

which in the former case was healthy has undergone degeneration and become ichorous, This state of things is often mistaken for glanders, in which the discharge is thin and sticky, and generally without any perceptible smell. In some bad cases I have seen, the trephine had to be employed in order to bore into the facial sinuses and cleanse them out. This is generally done with a wash made up of two quarts of warm water in which half a drachm of chloride of zinc is dissolved. Then, with a large syringe, inject this fluid through the opening made. A first-rate wash is also made of one ounce of carbolic acid to one quart of water. If the patient is properly nourished it may run dry. The best medicine in this case is the following: Take of sulphate of copper, nitre and gentian, one drachm each, made into a ball with linseed meal; give this dose night and morning.

LARYNGITIS.

Cause.—The three forms of this disease are usually induced by any or all of the following causes, such as sudden changes of weather, hot stables, coarse and dirty provender, rank bedding, and irregular work. The three kinds are the sub-acute, acute, and chronic. When that part of the throat called the larynx is the only part affected it is not very dangerous, but when complicated with influenza or other diseases it is a serious business. Through the larynx is the passage to the windpipe or trachea, and it is the mucous membrane lining that organ that is here the seat of inflammation. It may be, as in some seasons, endemic or epidemic; when it assumes the latter form the cause of this lesion is purely conjectural.

Symptoms.—The sub-acute form is what is supposed to be a mere cold and sore throat, with a slight cough, loss of appetite, and slight febrile symptoms; when the animal, by rest and a little ordinary attention, regains health in a few days. It is very different, however, with the acute form. Here we have well marked symptoms: labored breathing,

each inspiration attended with pain; the power of swallowing food interrupted or lost for the time; liquids especially cannot be let down without some returning through the nostrils; the face is dull and heavy looking; there is also a sort of short suppressed cough, more like a grunt; the head is held in a stiff position, and the nose protruding—any attempt to handle the part is instantly resisted with an eye that says, “Hands off;” there are at times spasms of the throat, with danger of asphyxia, in which case tracheotomy must be performed; the throat may be noticeably swollen, and the membrane of the nose of a scarlet hue; together with the labored inspiration, the pulse rises from 50 to 60 beats per minute, and the temperature to 103-4. As we said in a former article, the mucus secretion of the membrane is first arrested by inflammation; so here there are no signs of improvement until the secretion is increased and flows from the nostrils, when the animal is considerably relieved; the cough becomes freer and louder, the membrane more natural in color, with other symptoms of improvement for the time being.

Treatment.—Early and proper measures are to be taken in this case. All attempts at steaming the nostrils are useless and mischievous; they do little good—after many trials it has been proved only to irritate and distress the patient. Blood-letting also is here quite out of place.

Let the animal be removed to some cool, airy place, where he has the greatest liberty to do as he pleases, with plenty of bedding. Bandage the legs nicely, so as to equalize the heat of the body, and put on light, warm clothing. There will be some difficulty in giving medicine to the patient in this case, for the simple reason that any motion of throat and neck causes much pain, besides the difficulty of swallowing. The best thing to do in this state of things is to prepare an electuary: Take of extract of belladonna half an ounce, extract of opium half an ounce, camphor two drachms, liquorice two drachms, and treacle seven ounces. This is generally called a compound cough mixture. When this

mixture is properly made up take a spoonfull at a time and smear it on the animal's tongue. By this means there is no forcing or disturbing the patient; he will swallow as much as suits him at a time. This may be given two or three times a day. Besides all this, much good will be done by counter-irritation. Apply a good mustard poultice or strong liniment around the throat, with an eight-tailed bandage or without it—it makes no matter which, I never use one myself—but just apply a thick paste of mustard directly to the skin. Setons have been tried also, but this plan will do, without needlessly annoying the animal.

When the medicine here recommended is given it will have the effect of soothing and softening the cough, besides other effects.

Let there be some warm gruel left before the patient, but don't force him to drink—he will take a little at a time. After this, as he progresses, some green food, &c. When the throat symptoms are relieved tonics and stimulants twice a day must be given. Take of—

Carbonate of ammonia.	} Two ounces of each for
Gentian.	

PHARYNGITIS.

Cause.—The larynx and pharynx are so intimately connected that the same causes often produced either disease, except when mechanical injury or external violence accounts for injury of the latter. The pharynx is the posterior part of the mouth, through the funnel-shaped cavity of which food passes into the esophagus. These parts are occasionally hurt by the attempts to relieve animals while endangered by choking, especially by rough and inexperienced persons.

Symptoms.—These vary a little from laryngitis. In these cases there is little or no tenderness on pressure, but very difficult deglutition; in the majority of instances no food can be swallowed. Besides, there is scarcely any coughing, but very often spasms of the muscles of the neck. After

the inflammation has continued for some time the secretion from the lining membrane of the part is arrested (this is called the dry stage); then comes an increase of secretion. As the inflammation continues there is a superabundance of perverted mucus; this is in appearance like ropy saliva hanging from the mouth. In addition to these symptoms the head and neck are held straight out, to favor respiration and relieve in some measure the distress of the patient. The febrile symptoms are more or less severe in proportion to the severity of the local inflammation of the parts, as indicated by the pulse and temperature.

Should it be a case merely of stricture of the esophagus, it is easily distinguished by the peculiar and repeated cough which is caused by some substance lodging in any part of the passage.

Treatment.—Consists principally in the use of powerful counter-irritants applied to that part of the throat. Instead of mustard the following may be used :

Solution of ammonia.	} Two ounces of each. (Shake them well.)
Olive oil.	
Oil of turpentine.	

Or, if mustard is employed, a few drops of Croton oil may be added to make it more efficacious.

One ounce of saltpetre in the animal's drink will relieve (if given once or twice a day) the feverish symptoms. As to food, some nice gruel, if the creature is not forced to take it, will help to support his strength, but it must be very carefully horned down, or much harm may ensue. The usual clothing and bandaging must also be attended to.

BRONCHITIS.

Cause.—This is a most insidious and dangerous disease of the horse. Much the same pernicious influences mentioned in connection with former diseases of air passages produce bronchitis. Besides these, during the spring and fall of some seasons, this disorder seems to be epidemic,

from the number of animals attacked. I have known many instances of horses who were exposed to cold winds crossing ferries and other modes of conveyance contract bronchitis soon after in a bad form; also from standing in the street after a sharp drive when perspiring freely. The mucous membrane lining the air tubes which terminate in the lungs is the seat of the disease.

When bronchitis is associated with influenza it increases the gravity of the case, and is at all times a complication to be dreaded.

Symptoms.—The premonitory symptoms are seldom noticed or heeded until the disease is established. The first thing complained of generally is a bad cough, as if coming through a long tube. There is general constitutional disturbance; the respiration labored; each inspiration followed by several coughs; there is also tenderness about the throat. As the disease progresses the appetite is lost, the legs get cold, and the patient is averse to move. The mouth is hot and dry, and the nasal membrane highly injected.

During the dry stage of this disorder the feverish symptoms are well marked. The temperature of the animal may rise from 98° to 105° , the pulse also increase from 36 or 40 to 65 or 70 beats per minute, and the breathing from 20 to 30. In the next stage of the disease, called the moist stage, there is superabundance of secretion from the surfaces of the tubes; and in the case of very young or old animals this cannot be expectorated, and there is danger of internal drowning. Large quantities of thickened mucus accumulates in the air passages, and hence the air, in passing through, makes different sounds, according to the state of the secretion, as to whether it is hard, dry, or thick; in each case a different sound is heard when the ear is applied to the part.

During the disease the respiratory murmur is weakened, but there is no dullness on percussion, as in pneumonia, but on the contrary, resonance. In this malady weakness is

produced by the imperfect oxygenization of the blood from the blocking up of the bronchial tubes.

Favorable symptoms are shown by the falling of the pulse and temperature of the body, the breathing getting more natural, the cough symptoms relieved, and by the return of the appetite. The signs of danger are an increased and tremulous pulse, the breathing more painful, the nasal membrane of a bluish hue, and bloody froth hanging from the mouth. These, with paroxysms while the animal is coughing, are fatal signs.

Treatment.—The remedial measures for this disorder are indicated by the symptoms. As there is great weakness and prostration, no blood-letting is admissible. Steaming the nostrils, &c., are all out of date. Experience has proved they do more harm than good; they belong to the time when the block-wheeled cars were in fashion.

In the early stage of this disease, before there is increase of mucus (or in the dry state), it is well to bring down the pulse to something like its normal state. For this purpose 60 to 80 drops of aconite in a pint of water is the best thing; this may be given every second hour. This is a medicine that may do much harm if given in the next stage of the disease, so considerable experience is requisite to meddle with it.

To soothe and relieve the cough, take of:

Carbonate of ammonia.	} Make up with gentian	
Camphor.		liquorice or a little
Extract of belladonna.		linseed meal.

(One drachm of each for a ball, to be given three times a day.)

Roll up the ball, when made, in tissue or some thin paper; it will be handier to give in this form. One of this kind of balls is to be given three times a day, as gently as possible.

Have the sufferer removed to a loose, airy place; bandage the legs; put on light, warm clothing. Give one ounce of nitre in his drink—it will help him. In addition to what

remedies are already prescribed, it will be of the highest importance to apply powerful blisters to the front and sides of the neck, such as are recommended in the preceding article. Thick mustard plasters are mostly used in city practice, applied the whole way from the jaw to the sternum. When the bowels are constipated give no drastic medicine; this can be done by clysters of warm soap-suds, &c. The patient should be encouraged to take some kind of light, nourishing food; a little warm gruel is about the best that can be given. Even after recovery has progressed for some days, food in small quantities only is to be given, such as scaled oats, green food, but no hay. To build up the animal's strength tonics and stimulants are now required. For this purpose take of—

Carbonate of ammonia.	} Two ounces of each.
Gentian.	

Make this mass up into eight balls; give one morning and evening, with nourishing food and gentle exercise.

PNEUMONIA, OR INFLAMMATION OF THE LUNGS.

Cause.—In addition to the many pernicious influences already mentioned that excite and produce inflammation of the air passages in the horse, there are some others yet to be considered. Foremost among these is one for which ignorance, heedlessness, or influences beyond our control cannot be pleaded, and that is the fashionable atrocity of clipping horses in the winter season. Bronchitis and inflammation of the lungs, ending in death, are in thousands of instances the penalty of this beautiful habit. The pockets of some of our fast men have to pay very handsomely at times to indulge this fancied improvement.

Nature and science (both protestants from the earliest ages) cry out against this system as a monstrous innovation on their laws. No amount of blanketing and other clumsy appliances will compensate for nature's winter garment.

Inflammation of the bowels has also resulted from this cause. Unlike cattle, the muscles and skin of the horse together are not more than seven-eighths of an inch thick over the abdomen, whereas in the bovine race they are four or five inches. The bowels are so near the skin that intense cold affects them very readily. We have, lastly, examples of inflammation of the laminae (founder) change its seat and attack the lungs; this is called metastasis. Influenza and pneumonia are associated together in some complicated form in many instances, and render it very intractable to remedies. Cold and long continued over exertion are also common causes of pneumonia.

Symptoms.—This dangerous disorder is generally ushered in by shivering fits and irregular heat of the skin. The animal is “out of sorts;” the mouth is hot and dry, the nasal membrane discolored, and the extremities cold. The patient stands with his head drooping and his legs apart, to relieve his labored breathing. The bowels are usually costive, the coat rough, and the appearance of the animal is quite dejected and stupid. There is an occasional cough, but not of the severe character which is so prominent in bronchitis and other diseases; it is fuller, freer, and less painful. The pulse is full and oppressed, and increases to from 70 to 80 beats per minute. The constitutional disturbance increases the temperature to 105° or 106° in the congestive stage; the respiration is also increased and labored. In many patients only one is affected, and that chiefly the right lung, but both of the organs may be the subject of congestion or inflammation. During the first attack of this disease there is an abnormal amount of blood carried to the lungs, and a greater demand for the oxygen of the air to purify it; so to accommodate this state of affairs there is increase of respiration and labor. The capillary vessels which ramify upon the air cells become gorged with red blood.

This abnormal amount of blood forced into the lungs leads to congestion of those organs. Should the patient be

neglected in this stage of the disease the symptoms become greatly aggravated; the serum of the blood exudes through the coats of the blood vessels, and permanent injury is the result. The doctrine of exudation may be briefly stated thus: a quantity of fluid in porous vessels being forced upon a centre whose condition allows little or none of it to be transmitted, an effusion must result, through the distended coats of the vessels.

When the lungs of an animal are thus subjected to inflammatory action, as in pneumonia, this exudation of the serum of the blood is poured into the air cells, and there solidifies, which makes the hope of recovery in bad cases almost impossible. When the patient is seen and treated in time, that is, while there is only congestion of the lungs, no permanent damage has been done. When the cells are filled with this exuded material the lung is said to be hepatized, or a liver-like tissue. The healthy lungs float on water; in the latter state they sink.

Besides these symptoms there are others. If we apply the ear behind the shoulder, instead of the natural respiratory murmur of healthy lungs, we shall hear a fine crackling crepitation, succeeded by a coarse, mucus râle, as the disease progresses. When we tap the spaces between the ribs there comes back a dull, dead sound, which shows that the air cells are filled with the exudation. Dullness on percussion is the evidence of the solidifying of the cellular tissue of the lungs from the effects of the inflammation.

In some rare examples the inflammation leaves the lungs and attacks the laminæ of the foot, producing founder or laminitis.

Treatment.—The subject of treatment in this disorder is highly important. Improper remedies will do immense mischief, and in teaching others what plan to follow a man must know what he is talking about. In the late epizootic we had in some patients pneumonia associated with influenza, and many died from the effects of proper remedies

given at improper times, or in the wrong stage of the disease; or, to say the least, the chances of their recovery were sadly interfered with. We have said already that there are two stages of disease (or pathological conditions) in pneumonia, namely, the congestive, in which the serum of the blood has not transuded into the lung-tissue proper; and the state of exudation, in which it has infiltrated and solidified in the air cells. The indications for remedies in both these cases are quite different. How long does it take for congestion to pass into transudation? This is a vital point, and not easy to answer. It depends a good deal on the state of the blood and the degree of the inflammation. The time occupied in this mischief may extend from a few hours to a couple of days. As a general rule, veterinary surgeons do not see their patients in this first stage, through the carelessness or indifference of owners of horses; they will allow their grooms or coachmen to diagnose and tinker with the disease sooner than lose a few dollars for their services. Thus the most hopeful state of the patient is allowed to pass, and perhaps the case aggravated by improper nostrums administered by the stableman, or somebody else not much his superior in knowledge of the business. That great man, the veterinary surgeon, is supposed to be able to work miracles in these cases, and if he does not he is good for nothing in the estimation of the denizens of the stable. There are, however, some odd cases in which we meet a patient in this first stage, and it is well to know how to treat it successfully. This may be done by powerful sedatives, such as aconite, or, more powerful still, namely, blood-letting. This latter is indicated—

Congestive stage	{	When the animal is young and in good condition. When the disease is just commencing. When the fever runs very high. When the pulse is strong, firm or oppressed.
---------------------	---	---

Do not hesitate to take three or four quarts of blood from the patient under these circumstances, no matter what the

priest or the midwife may say to the contrary. By abstraction of so much blood as brings down the pulse we lessen for some time—

The fullness of the vessels,
 The number of red corpuscles,
 The force of the heart's impulse,
 “ arterial impulse,
 The excitement of the nerve centres,
 Equalize the circulation,

And by each and all of these influences we diminish the vascular excitement connected with the inflammation, and thus lessen the amount of resultant exudation, and make its changes less destructive.

Other practitioners of the new school try to produce the same effects by powerful sedatives, and with success in many cases. For this purpose 60 to 80 drops of aconite, in water, or sulphuric ether, every two hours, until there is depression of the circulation indicated by the pulse; at the same time giving one ounce of nitre in a pint of water.

The symptoms that do not warrant either of these depressive measures are—

Stage of Transudation	{	When the patient is shivering and the skin cold. When the symptoms of disease continue for several days. When the pulse is small and feeble. When signs of debility are observable. When exudation has taken place.
--------------------------	---	---

These are contra indications that no depletive measures can be pursued with safety, and they are such as most people of ordinary intelligence can know for themselves, and of course avoid.

The diagnosis, symptoms, and treatment of pneumonia in its first stage we have tried to show as briefly and clearly as the plan of this little work would permit. We have not said all, but enough for correct and safe management of animals in this disease.

Exudation of the liquid portion of the blood into the cells of the lung-tissue (we again repeat) is the second and dangerous part of this disease, and requires very different remedies. This state of things is known by a dull sound responding to tapping or percussing with the ends of our finger over the lungs. A cavity filled with air, and one full of solid matter (as in the unhealthy animal in the former case) elicits very different responsive sounds. The coarse crepitant or mucus râles heard by the ear when applied to the side is also another proof of transudation. This fluid may be either mucus, pus, bloody or serous effusion. What becomes of this fluid after it is outpoured? The answer to this question decides the fate of the patient, whether it shall recover or die. First, it may, as in the case of inflammation of the liver and lungs, suppurate, and pus form; or the lymph exuded may degenerate into exudation granules, and be finally absorbed. Now, the medicines to be given are such as will assist nature in getting rid of this exudation by absorption, and the best for this purpose are tonics and stimulants throughout. Take of—

Diffusible stimulant for one dose	{	Spirits of ammonia	-	One ounce.
		Sulphuric ether	-	Two ounces.
		Linseed oil	-	Six ounces.

If the bowels are not constipated omit the oil and give water. This dose may be given two or three times a day for the first two days. Afterwards take of—

Carbonate of ammonia	{	Two ounces of each.
Gentian - - -		

Make into eight balls; give twice a day.

In addition to all that has been said, great attention to feeding (light, digestible food), in small quantities at a time, is of the highest importance. Bandage the legs, clothe the body, and remove the patient into an airy, comfortable box-stall, with plenty of bedding. Many relapses have taken place from over-feeding.

Blistering the sides with mustard or other counter-irritants is often tried in severe cases, but its good effects are very doubtful. However, it is an open question, and may be left to the judgment of the individual practitioners.

PLEURITIS, OR PLEURISY.

Causes.—The causes are very much the same as produce pneumonia, and it is needless to repeat them.

Symptoms.—Inflammation of the serous membrane lining the chest and protecting the lungs is sometimes found as an independent disease, and also in connection with bad cases of pneumonia. The principal symptoms are shivering, with hot mouth and other signs of fever; disinclination to turn round or move; a rapid, firm, corded pulse; an occasional short, painful cough; hurried, shallow, careful breathing, sometimes followed by a sigh or grunt. In a state of health this membrane has a soft, oily touch; it is thin, fine, and transparent as a silk pocket handkerchief, and during respiration has a slight motion. But when inflamed every act of breathing causes intense pain. To avoid this pain, caused by the movements of the ribs, the abdominal muscles are called in to aid in respiration—there is tucking up of the belly and lifting of the flanks.

Pressure on the spaces between the ribs causes pain, and when the ear is applied to the chest it discovers a rough, rasping noise.

During the early part of the disease the horse frequently looks round to his side, paws with his feet, and breathes in a jerking manner. After some time—from one to three days—the patient seems easier, the pain is gone, and the animal looks more cheerful.

Exudation is now proceeding; the fluid portion of the blood passes into the chest to the amount of from six to ten gallons; this state is called hydrothorax. After this the breathing becomes worse, with flapping of the nostrils, lift-

ing the sides, a small, irregular pulse, and swelling of the legs. When the water-line is not higher than one third of the chest the patient may recover. In some few cases there are adhesions of the pleura from the effects of fibrinous lymph.

Treatment.—Very much the same style of treatment is required in pleurisy, that has been recommended in the preceding article for pneumonia.

If the patient is seen in time, before effusion has taken place, blood to the amount of five or six quarts may be taken. The warnings for non-depletive measures are so clearly expressed in my treatment of pneumonia, it would be idle to repeat them. It is there commended, with many cautions and reservations. If the bowels are costive give laxative medicine—four drachms of aloes in solution; give the patient also one ounce of nitre in his water for a few days. In addition to these remedies, counter-irritants, such as ammonia or mustard, must be applied to the sides of patient over the lungs.

I recommend also tonics and stimulants to be given, as in pneumonia—gentian and carbonate of ammonia.

Besides this a diuretic ball, for this purpose, take of—

Twice a day	{	Saltpetre	-	One ounce.
		Resin	-	“
		Soap	-	“

In some very bad cases the liquid has to be removed by making an opening into the chest with the trocar and canula between the seventh and eighth ribs; but it is better to avoid this if possible, and trust to the treatment here laid down.

CHRONIC COUGH.

Cause.—This is generally an “old follower of the family diseases,” such as catarrh and bronchitis, and not so easy to shake off. When badly treated or neglected these disorders generally end in chronic cough. It consists in an irritable state of the mucous membrane of the air passages. It is easily excited by exercise, changes of temperature, and other trivial causes.

Treatment.—Several applications have been tried with good results. The following is about the best :

External	{	Croton oil	-	15 to 20 drops.
use		Glycerine	-	1 ounce.

Let this be rubbed immediately on the throat around the larynx every ten days. Another plan has been tried with good results—the application of a red-hot iron, sometimes the head of a hammer, held there for a few seconds until the part is blistered ; it may be repeated twice in a month. The former is the safer method in unprofessional hands. In these cases cough mixtures do very little good ; they only relieve, but don't cure.

ROARING.

Cause.—Atrophy of the muscles of the larynx, in consequence of which the cartilages fall inward at every inspiration. The calibre of the passage being thus diminished and obstructed, the air in passing along produces a peculiar roaring, grating sound, and in some horses a sort of flap. Roaring, highblowing and whistling results from these causes—they supervene from strangles, tumors, and tight reining, which last was a very common aristocratic fashion in Europe a few years ago. The bearing-rein accomplished this purpose.

Some rare instances of confirmed roaring have resulted from continued terror and fright.

Each of these defects constitute unsoundness, because they interfere with a horse's present usefulness.

No treatment recommended.

THICK WIND.

Consists in a thickened, corrugated condition of the mucous membrane of the ultimate and remoter bronchii, and usually results from repeated or serious attacks of bronchitis.

The breathing is accelerated, the number of respirations and inspirations are equally increased, and are accompanied

by a loud wheezing noise, which is particularly observable during exertion. Any sudden movement, a sharp trot, or even an unexpected blow upon the ribs, produces a short, dry, loud cough. Thick wind may be palliated, and occasionally cured, by sedatives. For this purpose take—

Nitre	-	-	-	} One drachm each.
Opium	-	-	-	
Camphor	-	-	-	

This dose may be given once or twice a day before the animal is fed, and continue for two or three days.

Another excellent preparation for the same purpose is the following :

For one ball	{	Nitre	-	-	-	} One drachm	
		Extract of belladonna					} each.
		Arsenic	-	-	-		

This may be given for seven or eight days. The complaint may also be greatly mitigated by using easy digestible nutritive food of small bulk, supplying one or two pounds daily of linseed cake. Beside these, feed regularly and often. Limit as much as possible the quantity of water—small drinks, but often, if required. And lastly, always allow an hour to elapse between feeding and work.

BROKEN WIND, HEAVES, PULMONARY EMPHYSEMA, &c.

These names stand for a structural disease which is seen by one inspiratory followed by two expiratory acts while breathing. There is also a hollow, muffled cough, which is easily detected by pressure on the larynx; the nostrils are unnaturally dilated, and the flanks constantly agitated; the ribs and abdominal muscles are called into action to assist in the double expiration. This disease results from rupture of the cells or lobes of the lungs, and is generally produced by feeding on coarse unnutritious food in large quantities. When the animal is put to work in this state the pressure against the lungs ruptures those parts. It is sometimes hereditary.

No cure recommended.

CONGESTION OF THE LUNGS.

Cause.—This lesion, although the precursor of pneumonia, also exists in a separate form in some patients. This modification of the disease depends very much on the exciting and producing cause; for example, young horses in high condition, that are allowed no work for weeks, at the whim or caprice of the owner are taken out and suddenly put to the top of their speed without any preliminary exercise. This applies more especially to trotters, hunters, and race-horses.

Animals in poor condition, also that are put to severe and unusual work, each of these blunders may give rise to congestion. Sudden exposure to severe cold is also a prominent reason for this lesion. In this state of affairs the heart and lungs are overcharged with blood, and although no exudation has taken place, yet the lungs are filled with dark blood and frothy mucus.

Symptoms.—The animal blows at a great rate; his nostrils expanded, the eyes appear as if going to jump out of their sockets, the elbows are turned out, and the flanks heaving; the animal is in great distress, while the whole body is bathed in perspiration. Sometimes all these symptoms appear in less time than it takes to write it down, and consequently prompt treatment is required.

Treatment.—The causes inducing or exciting any lesion must always be remembered, and considerably modify the remedies in many instances. In this case a very simple remedy of the right kind will set the patient all right in a few minutes, while one of the wrong sort will do untold mischief. We have seen that the heart and lungs were suddenly over-taxed, therefore the need of immediate help. Almost any stimulant will do, as whiskey, brandy or ale, or three drachms of sweet spirits of nitre or sulphuric ether in a little water. Let the animal also be well rubbed over, especially the legs, and his head turned to the wind.

DISEASES OF THE BLOOD

AND

SYSTEM IN GENERAL.

STRANGLES.

Cause.—This eruptive disease of the horse resembles very much murrain in cattle, and is analogous to measles and scarlatina in children. They all belong to the Exanthematous class (as erythema, urticaria, and reseola in man).

The seat of these disorders is not the skin, neither is the inflammatory tumor in the submaxillary region of the horse the seat of strangles.

The causes in operation to produce strangles are not precisely known; some veterinarians are of opinion that during colthood some poison is gradually engendered in the system, which deranges the vital powers, which, when the animal matures, nature takes this method of expelling it from the system. But no matter how this poison enters the system; they are all agreed that the blood is the seat of this disease. It is very probable that the horse in his wild state is no more troubled with strangles than the Indian on the plains are with many of the ills of civilization. It is very frequently the case that the poor man's colt matures without any traces of strangles, while well kept and pampered animals have it in a severe form.

In the case of strangles the constitutional disturbance, or fever, is the cause of the tumor with the other symptoms, and not the tumor the cause of the feverish excitement or disturbances.

Symptoms.—As a general rule this disorder comes on slowly; there is general indisposition, the animal is out of condition. In a few days there is stiffness about the neck; it is suspected the animal is “breeding strangles;” there may be a sore throat and a cough. As the fever heightens there is a discharge of a thick yellow muco-purulent matter from the nostrils, and some difficulty in breathing. By this time the appetite is lost. The pulse increases to 50 or 60 beats per minute. The respiration and temperature are also increased.

Soon there is noticed an enlargement under the jaw, which may extend to the parotid glands; it is very hard, hot, and tender. When these parts are examined there is usually found a hard, inflammatory tumor in the sub-cutaneous cellular tissue between the branches of the lower jaw.

When this is the history of the case it is progressing very favorably. If in eight or ten days the tumor softens and its contents escape, the crisis of the disorder and the danger is past. But should the disease take an irregular form, as often it does, and the tumor not form, or go back and reappear somewhere else, or if it does not suppurate properly, or should it form on the inside of the thigh, under the shoulder blade, or, worst of all, form on some of the internal organs, these are complications to be dreaded, as some fatal result may follow. This state of things may be suspected when the time has past for the formation of the tumor in the ordinary place. Then there is wasting and prostration of strength, with derangement either of the digestive or respiratory organs.

Treatment.—The indications for treatment in these diseases is to use such means as shall conduct them to a safe termination. Any measures that arrest or put back the course of the disorder is to be avoided, therefore no blood-letting, or physic, or such medicines as aconite, opium, &c., are to be used. The great object to be gained is the healthy maturing of the tumor in its right place. Good nursing is

better than medicine in this disorder. In ordinary cases the tumor will mature without any application or interference; if it does so much the better.

Blistering will do good when the tumor is unusually long in coming forward. In ordinary cases the abscess will burst of itself. The time for using the knife is indicated when the tumor becomes pointed, and fluctuations are felt when touched by the finger.

Great attention from the first is required in nourishing the patient; every inducement to eat should be tried, such as apples and carrots, crushed and scalded oats, or anything the patient will eat. In some very bad cases, where the animal is in danger of suffocation before the bursting of the tumor, we have to perform tracheotomy to save the animal from asphyxia. When recovery is progressing, tonics and stimulants should be given to build up the constitution; those already recommended will suit very well, such as ammonia, gentian, &c.

THE LATE EPIZOOTIC.

INFLUENZA, CATARRHAL FEVER, DISTEMPER, PINK
EYE, &c.

This disease, which raged with such violence over the United States and other countries, first made its appearance here about the 20th of October, 1872, gradually extending north and west to Canada, California, and even to India, taking in its sweep both hemispheres. Neither age nor condition seemed to interfere with its operations. Horses—old, young, clean or dirty, the pampered trotter and the neglected truck horse, all fared alike at the attack of this leveller, which we call influenza in its epizootic form.

Of the influences or morbid causes originating this disorder, the wisest thing to say is, that we know very little. They have been termed atmospheric, electrical, and so forth,

It belongs to the same class as pleuro-pneumonia and murrain in cattle; while its attacks are chiefly confined to the late spring and autumn months of the year.

This epizootic was emphatically called the "new disease" by all sorts of people; the newspaper men were everywhere, the doctors nowhere. According to these ubiquitous and tenacious gentlemen it was an unheard-of disease, and the veterinarians were completely at sea as to diagnosis and treatment. Of course it should, like all new things, have a bran new name, and accordingly a score of names were invented, each the length of a horse's tail, as each phase of the disease presented itself. Needless alarm, and absurd treatment by unprofessional persons was the result of these false statements.

It would be very interesting (if space permitted) to trace the history and visitations of this disease in Europe since the year 1848. During these 24 years no less than eight calamities of this kind afflicted the equine race in its epizootic form. So far from this being a new disease, the profession are acquainted with it since 1848; and it is highly probable it will be a new disease before a few seasons roll round again.

The enzootic form of this complaint is present with us every spring and fall, and is (in stable language) called "pink-eye," "distemper," &c. The authorities in the stable also call strangles "distemper;" so it is hard sometimes to understand their names.

Symptoms.—This disease belongs to that class known as zymotic, or blood-poisoners, from a Greek word which signifies to leaven (as from yeast, to ferment); hence the blood is the seat of the disease. This is soon manifested by a low, debilitating fever, of the typhoid form, and always tending to complications of various organs of the body.

The earliest and most prominent symptom is weakness; the muscular debility is out of all proportion to the indications of the pulse or temperature, and is chiefly shown by

hanging of the head and a very staggering gait. Chills and shivering, loss of appetite, a dry staring coat, with watery discharge from the eyes, are also among the first signs of this disease. The pulse is feeble, rising from 50 to 60 beats per minute, the respiration slightly increased, and a short, dry cough. The mucous membrane is injected, and after a few days a discharge of a thick, creamy character hangs from the nostrils. This is generally called the catarrhal form of influenza. As this state of the disease progresses the pulse rises from 60 to 80; temperature from 104 to 105; respiration proportionately accelerated. The head is held down, the legs extended, and the patient is afraid to lie down.

The bowels and kidneys also suffer; the excretions are scanty, showing torpidity of those organs. This is a most complex disorder, and always involves some particular part or organ. During the late epizootic the complications in individual cases were :

Influenza complicating—

{	Laryngitis.
	Bronchitis.
	Pneumonia.
	Pericarditis.

Each and all of the patients with complications of these characters had to be treated according to their several indications.

In very many cases the great debility and weakened circulation gave rise to passive congestions, with dropsical tendencies in various parts of the body. Thousands of animals that rallied and recovered from the violence of the disease, afterwards suffered from abscesses, rheumatism, and permanent enlargement of the joints and legs.

If we should suppose that altogether 10,000 horses died from the immediate and remote effects of this disease, we may safely tabulate them in this fashion :

Died within the first month after the invasion of the disease, 7,500.

7,500 { From the violence of the disease.
 " neglect.
 " improper use of aconite, belladonna, and
 purgatives.
 " having worked before recovery was established.

Died, within from two to twelve months from the annexed causes in the order of time—

2,500 { Hydrothorax.
 Œdema.
 Purpura.
 Farcy.
 Glanders. } Influenza, succeeded
 by

It may be observed that in such complexity of disease there must be diversity of symptoms; but the one symptom that predominates over all the rest is the fact that there is great muscular debility from the very beginning. This is shown by the staggers gait which is characteristic of this disorder. Some bad cases of this kind have been mistaken for spinal meningitis, where we have paralysis of the extremities, but any close observer of horses will be able to detect the difference. The facts of thermometry are of much importance likewise in the differential diagnosis of these cases. The post-mortem appearances of some of the chronic cases we remember distinctly. One that ended in purpura showed particularly the ravages of the disease; solid fibrous clots separated the coats of the stomach and parted the muscles; they were also found in the intestines, lungs, and brain. When this malady occurs as a sequel to influenza it is generally fatal.

The question has often been asked, "Is this disease you call influenza contagious or not?" Considerable diversity of opinion, even amongst veterinarians qualified to speak on the subject, exists on this question. Many eminent men in the profession believe it to be contagious, but when asked for the proofs they are not forthcoming. This will no doubt be decided as veterinary science advances. However, an admission of the fact is error on the right and safe side.

In other cases examination of the subjects after death showed the pleural cavities filled with serous fluid; the lungs dark colored and filled with bad smelling lymph; purple spots on the intestines, and sometimes ulceration of the larynx; and the muscles of an unhealthy color.

Treatment.—There is very much in common in the treatment, although it must be modified a little according to the organs involved. We have shown that great muscular debility accompanies the disease, therefore no purgatives should be employed, as a fixed rule. All depletive measures, such as are produced by blood-letting, the use of aconite, belladonna, &c., are all out of place. This applies to every form of the disorder, and should be especially borne in mind, as a rule without exception. Hundreds of horses that might have recovered without any medicine, but good nursing, died from this cause, as before mentioned, namely, purgatives, aconite, hellebore, belladonna, and abstraction of blood.

It is a fact worthy of record, that the mode of treatment pursued by the profession since this disease showed itself, has never varied within the last twenty years, nor do they see any reason for so doing, so long as the nature and symptoms of this disease remain the same. Therefore the same remedies (and their modifications) will be in use in solitary cases, as well as when large numbers of animals are the victims, unless the disease assumes new aspects altogether.

Having removed the animal or animals to airy, comfortable stalls, we bandage their legs, put on light clothing, remove and shake them two or three times a day. If the bowels are costive, we keep them in good order with clysters and soap and water. If very costive, give also two drachms of aloes in solution. From the first day of the attack begin with tonics and stimulants; the best I know of is the following: Take of—

2 ounces	{	Carbonate of ammonia.	{	For 8
of each		Gentian.		balls.

Give one morning and evening.

When the cough is very distressing we give the following :

Compound cough mixture	{	Ext. of belladonna	-	Half an ounce.
		“ opium	-	Two drachms.
		Camphor	-	Three “
		Liquorice	-	Two ounces.
		Treacle	-	Eight “

Smear a spoonful on the tongue two or three times a day.

The food to be cooked, and consist of carrots, apples, crushed oats and bran; and also an ounce of saltpetre in the pail of drink. To such patients as have the bronchial tubes affected, strong linaments or mustard to be applied along the throat to the sternum.

When effusion of serum into the cellular tissues first made its appearance, by swellings of the legs or sheath, we found this remedy very efficacious: Instead of giving the ammonia and gentian as in the first prescription, we give the following :

One dose, 2 or 3 times a day	{	Iodine	-	-	-	20 grains.
		Iodide of potassium	-	-	-	1 drachm.
		Sweet spirits of nitre	-	-	-	2 ounces.
		Water or gruel	-	-	-	1 pint.

Or another very good preparation is the annexed—

Make into 8 balls	{	Iodide of potassium	-	} One ounce of each.
		Carbonate of ammonia	-	
		Gentian	-	

Give one morning and evening.

The symptoms of returning health should be manifest the fourth or fifth day, and is seen in the clearness of the eyes, firmness of the pulse, the heat of the skin more equalized, a discharge from the nostrils, and some action of the bowels. Recovery is expedited by rest, good nursing, proper food, and the remedies already mentioned.

SPINAL AND CEREBRO-SPINAL MENINGITIS.

This disease occurs in man, in an epidemic form, as well as among the lower orders of animals, from similar causes, producing similar effects, and therefore it should be considered as a panzootic malady. Its clinical history, however,

will vary according to the physical condition of the patient, or the creature in which it is manifested.

This affection has been described under a variety of names, by different authors, in accordance with some prominent symptoms which they at various times observed, and thus regarded as pathognomonic or characteristic of these diseases. In New England the medical men, in short, call it "spotted fever," while in the South it is known as the "cold plague," in common parlance. It has also been described as *diphtheria*, *putrid fever*, *paralysis*, and *blind staggers* by veterinarians. And on the other hand, no doubt that both medical and veterinary men have confounded several distinct affections under this new and popular name which has only recently been introduced into medical literature. Many have supposed, therefore, that this disease originated in modern times, but such is not the case. It has undoubtedly existed from remote antiquity. Dr. Tourdes believes that it was prevalent in Europe during the fourteenth century. And were we able to fathom the mysteries of the dark ages, we should undoubtedly find that it was raging then and known as one of the plagues which decimated the herds, and those nomadic tribes. Its geographical distribution is very extensive; it is not confined to any peculiar locality, nor to any one class of patients. The disorder seems to occur in a series of isolated eruptions rather than by general spreading. Hence we are led to conclude that it is not contagious, but that there is some special cause in operation. Perhaps there may be a blood-poison of some kind floating in the atmosphere, but what it really is we do not know; and there are undoubtedly secondary causes which thus co-operate in producing the disease. It usually occurs in the spring and early summer, when the weather is changeable, both in temperature and in the humidity of the atmosphere. This would indicate the probability of some septic change taking place in the blood, which is greatly facilitated in its operation by a certain amount of heat and moisture in the surrounding media.

It attacks animals under all conditions, whether well cared for in the barn or in the open field; hence we cannot attribute it, as many have, to stable management. This disease, as its name implies, is an inflammation and congestion of the membranes which surround the brain and the spinal cord. Hence the lesion, or seat of disease, will be found upon post mortem examination to be wholly within the nervous system; and therefore the symptoms must of course vary according to the degree of severity of the individual cases, from the mildest forms to those where death, in fact, is your only premonition. The invasion of this malady is always sudden, and, as in other epizootics, the earlier cases are extremely fatal.

In man three well marked forms of this disease occur, which Radcliffe has denominated as the "simple, fulminant, and purpuric," and the same is often observed, with slight modifications, in the equine race. But I shall consider all these forms under two divisions, which I trust will be found to be the most natural and convenient, as we cannot study nervous phenomena in the lower orders of animals with that degree of exactness as among ourselves when aided by the emotions and powers of speech. Hence the necessity of being thorough in our examinations of these affected creatures, in order that we may know the extent of these morbid changes, and the probable chances for recovery in extreme cases.

This disease, in its inception, usually attacks the head or spinal cord only; but afterwards, in severe cases, involves the entire nervous system, when the symptoms, of course, though different at first, become very similar in the fatal termination of both these forms, from the same cause.

The cerebral mode of invasion is not of more frequent occurrence than the other, and in mild cases your attention may only be called to a general indisposition of the animal. While in others you will first notice an inability on the part of the creature to swallow, and in attempting to drink will

often drool as though something was the matter with the throat; soon there will appear a copious discharge of saliva with more or less mucus, and on opening the mouth food will usually be found on the tongue and between the teeth, and the sides of the buccal cavity. At this stage, if the horse is continually masticating, as is often the case, you may be sure that the power of deglutition is entirely lost, so that no particle of solid or liquid food can be swallowed.

This symptom, though often mistaken for diphtheria, is but the consequence of the partial paralysis of the glosso-pharyngeal and pneumogastric nerves which supply sensation and motor power to these parts; and therefore it serves to indicate the degree of disturbance which has already taken place in the *medulla oblongata*, at the base of the brain, from which these cranial nerves arise.

SPINAL MENINGITIS.

In the spinal mode of the attack the animal at first appears unsteady in action, and there is great tenderness on pressure along the spine, which is not the case in the early symptoms of the other form. Very soon the horse loses all power of co-ordination, and thus falls prostrate from the inability to use the posterior extremities, which in many cases are completely paralyzed from the congestion and effusion that has taken place in the spinal cord within the lumbar region. At this time the sphincters that guard the outlets of the bowels and bladder are also relaxed, so that the creature has no control over these passages, and not unfrequently, as the inflammation extends forward, the muscles of the anterior portions of the body and of the neck become rigidly contracted, for a while, similar to that of lock-jaw. But as the head becomes involved the paralysis is apparently complete, when death by coma or insensibility soon follows. Thus we see the difference in these two modes of attack. The respiration, in the first form, becomes affected *early*, or as soon as the medulla is involved, but not until *later* in the

other; and so with the paralysis of the organs of deglutition, which in the spinal mode of attack does not usually appear until just before death, for a majority of these cases prove fatal. The temperature varies some four or five degrees from the normal, according to the physical condition of the patient and the protraction of the malady; but in certain *fulminant* cases, which, as the term implies, occur so instantaneously that there is no apparent interval between the time of one portion of the nervous system being attacked and the other, the temperature from the severity of the shock may even fall below the normal. Such cases of sudden death are usually mistaken for "blind staggers."

The pulse is quickened at first, but grows slow and feeble as the disease approaches a fatal termination. The state of the bowels depends in a great measure upon the degree of the spinal paralysis. They are usually costive at first, but often become extremely loose. The "spotted" appearance of the skin, which is one of the characteristic symptoms in the human subject, is believed to be of rare occurrence in the equine race, though I have observed it on two occasions in a marked degree. There appeared upon the sides of the body, near the fore legs, a series of round, hard patches, somewhat elevated, about the size of a penny, and some twenty in number on each horse, which remained for a number of hours.

Treatment.—"In a disease so rapid in its course and fatal in its character," observes Professor Large, "it is extremely difficult to say anything satisfactory of the course of treatment to be adopted. There are certain indications to be fulfilled; the question is, how is it best to carry them out? We must take into consideration the nature of the disease, the probable progress it has made, and the mischief done before the case is seen; it is not often that the veterinarian is called in at the onset, but generally when he examines his cases he will find from the paralysis of some parts, as the throat or posterior extremities, that the inflammation

has existed long enough for its products to be exuded from the vessels. We must also take into consideration that in the cases where the power of deglutition of both fluids and solids is lost, we are deprived of one method of administering medicine, viz., by the mouth, unless a stomach-pump should be within reach, whereby we might pump or pour the medicines through its tube safely into the stomach. We must give a caution with regard to administering draughts or medicine in a fluid form. It is often a risky experiment for an inexperienced person, even on an animal whose powers of deglutition are perfect, but in the cases now under consideration, where those powers are but imperfect, if not altogether lost, it is fraught with great danger; the fluid may perhaps pass down the trachea to the bronchial tubes and produce death by suffocation. If fluid medicine is administered, it must be of a clear nature, and but little in quantity. There are other methods of administering medicines, such as by the rectum, or the hypodermic method; but when suddenly called away from home, we have not always these facilities for administration.

“The next questions are, ‘What medicines should be administered?’ ‘What is the course of treatment to be adopted?’ As we have inflammation of a very important and grave character to deal with, all our treatment must be brought to bear upon it—to subdue it, if possible, or endeavor, if we can, to diminish its intensity—to limit it to a part of the spinal tract, and prevent it spreading to others. If when the surgeon is called he finds the patient down, prostrated, or that it has lost for some little time previously all power of deglutition, he will find it almost useless to attempt treatment; but should the animal not be prostrated, and should it be able to swallow food, or a bolus, though it cannot swallow water, the prognosis is more favorable, and treatment should be undertaken and persevered in while there is a reasonable hope of recovery.

“Blood-letting is a powerful antiphlogistic agent, but in

the large majority of these cases there are no indications by the pulse for its use; it must therefore be dispensed with. We must resort to cathartics, such as aloes, as the depletive agent, and besides make use of those sedatives whose action is directed principally to the nervous system, and that exercise an influence on the capillary vessels and limit the supply of blood going through them to a part. The agents we have used for this purpose are tincture of aconite and extract of belladonna, alternately; commencing their administration soon after giving the cathartic, not waiting for its action, as time is very precious. In fact, we frequently combine the sedative with the cathartic, as follows—from one to two teaspoonfuls of extract of belladonna with a full dose of aloes, for an adult horse; then administer tincture of aconite root in half teaspoonful doses in part of a tumbler of water every three hours, or alternating every other dose with a medium dose of the extract. This is the course of treatment followed by us for several years, and in the cases where recovery took place. Local applications, such as stimulants or counter-irritants, in the form of blisters, to produce a revulsive action, should be applied to the spine and throat; these should be repeated from time to time till relief is afforded. Finally, should the case or cases be so protracted that failure of the vital forces, or great exhaustion, is apparent, all agents of a depletive or sedative nature must be abandoned, and stimulants and tonics be administered in their stead, to sustain the system.

“When the patients respond to the treatment, it will be found that the muscles regain their power in a short time, so that if it is the throat that is affected, in the course of a few days the patient will be able to swallow well, though some time will be required for a complete restoration to health.

“Other measures of treatment, both as regards those attacked and those under preventive treatment, will have reference to hygiene and diet. Keep the animal in stables

or apartments that are clean, airy, but free from draughts. Let them have fresh water by them constantly ; even if they cannot swallow much of it, it will be grateful to them to wash their mouth, and they may even manage to get a little down. With regard to food, let them have small quantities of nutritive food, of small bulk, nicely prepared, and moderately thick gruel, &c. The surface of the body and extremities should be watched as regards temperature; if cool, thin, light, warm clothing and bandages to the limbs will, by equalizing the circulation, materially assist the treatment."

In addition to these valuable suggestions, I would say that as we do not know of any specific antidotes for this disease, nor how to eliminate the supposed morbid poison from the blood, our plan in the course of treatment should be to stay, if possible, the progress of the malady and restore the vital powers. Hence tonics are indicated from the first. Quinine and other preparations of Peruvian bark, with the tincture of iron, which will be of great service in keeping up the strength of the animal. *Digitalis* has an important action on the heart, and should never be lost sight of in the treatment of all such nervous affections. It may be combined with alcoholic stimulants, and thus used to good advantage in sustaining the action of that vital and all-important organ. Bromide of potassium has been given in the early stages with valuable results, and it is deserving of a more systematic trial in the hands of veterinarians. It should be given in ounce doses freely, dissolved in water when the creature can swallow. The permanganate of potash has been used on account of its supposed antiseptic property in thus nullifying the effects of this blood-poison. Counter-irritants and blisters along the spine are of great value if applied early, and even actual cautery freely applied to the back has been followed by great alleviation of the pain, in the human subject. The application of ice to the head and along the spinal track has furnished by far the most satisfactory results of all direct treatment; but if there is much prostration

from its use, the creature should be kept warm by blankets and artificial heat if necessary, especially in winter. When the extremities become cold and there is much shivering, friction with chloroform, hartshorn, or turpentine should be resorted to. Experience leads us in such cases, where the vital powers seem to be failing, to give large and repeated doses of gin or brandy.

In relation to the principles of veterinary hygiene, I would say that we cannot bestow too much time and attention upon these afflicted animals. The stables must be well ventilated daily and clarified by the free use of disinfectants, especially if there are a large number of horses together. Horses should not be used after they show any signs of this disease, and undoubtedly many might have been saved had this precaution been carefully heeded; nor should they be used too soon after having recovered from an attack of this kind.

PURPURA HÆMORRHAGICA.

Cause.—This terrible disease very rarely occurs as a primary and independent disorder in our animals; it usually attacks old and debilitated subjects, and may be the termination of various diseases, such as pneumonia, influenza, &c. When suffering from these attacks patients are very often neglected or wrongfully treated, or, oftener still, put to work before health is established. This is the history of hundreds of cases which come before veterinarians in the course of their practice. Remonstrance with owners of horses on this cruelty is generally unheeded. Mr. Mayhew has preached more on this subject than most men, but it is very doubtful if he did much good except increase the volume of his book. The result of these things is the loss of numbers of horses by purpura and other disorders. This disease most frequently is the sequel and termination of pneumonia, strangles, or influenza, and in odd cases of neglected colds. Neglect or wrong treatment of any of these diseases may lead to purpura.

The immediate cause or causes of this disorder may (in common with other blood diseases) depend upon a chemical and dynamic change in the blood. We have endeavored to show how this occurs in a former article, and it may be repeated here. It originates at least in two ways: First, by the non-excretion (and consequent accumulation in the blood) of excrementitious substances which, by their own properties, or by the chemical changes they undergo, prove highly injurious to the system; or, secondly, by the introduction into the blood of morbid substances from without.

The **effects** of these poisons when introduced or retained in the bodies of animals are both local and constitutional. The constitutional symptoms, which always begin the attack, are nearly alike for them all: but the local symptoms are peculiar to each. There is one fact in connection with this subject worth remembering, and that is, that the poison resulting from the non-elimination of the excretions is never a primary and independent affection. It therefore must be studied in connection with those disorders of which it forms a secondary or resultant, though important part. A right understanding of these facts will enable us at once to understand the nature and symptoms of *purpura hæmorrhagica*:

Symptoms.—We have endeavored to show that when such diseases as influenza, pneumonia, or strangles are neglected or mismanaged, or when these diseases are prolonged, there is engendered and retained in the system some specific poison which reduces the vitality of the blood; this is seen in the diminished quantity and altered condition of the fibrine of the blood, which renders it thin and imperfectly coagulable.

When the blood is thus thin and impoverished it is imperfectly retained in the badly nourished vessels, and becomes extravasated on the mucous surfaces. When the disease has progressed this far the symptoms are soon manifest to the senses. This effusion of blood may be seen in spots in the nostrils, within the lips, and about the head; from these red

or purple blotches, blood constantly oozes. Soon after swellings appear about the head, sternum, belly, sheath, and hind limbs; this is caused by the effusion of serum, mingled with blood, into the cellular tissue. After a little time these enlargements become firm and hard, and crack in a few days, when bloody serum exudes from the openings. The skin is hot and thickened, but not painful. These swellings must not be confounded with anasarca, for there are important distinctions between them; in the first place, they are not the offspring of the same vicious parents (although some contend that they are cousins on the mother's side). All dropsies proceed from a depraved habit or system, or, in other words, an error of development and vice of nutrition affecting the general state of the organs and functions with perversion or debility.

In the former the swelling is firm and unyielding to the touch; in the latter it is soft and pitting on pressure. The cause producing the one is called by learned folk "toxæmia," the other "cachexia."

In the second instance the serum effused into the cellular tissue which produces the swellings is mingled with blood; in the case of general dropsy it is simply serum.

Besides the symptoms already mentioned there are others. The appetite fails, the bowels irritable and irregular, the action of the kidneys is also imperfectly performed, the pulse is quick and weak, and there is great general debility; the swellings about the head and lips interfere with eating, and, more serious still, purple extravasations similar to those within the nostrils are apt to spread along the mucous membrane of the stomach and bowels, giving rise to indigestion, colic and diarrhœa.

Not only so, but these blotches may appear on the still more sensitive lining of the bronchial tubes and lungs, producing blowing, choking, and a suffocating cough. These symptoms are seen in the dilated, flapping nostrils, from which bloody serum trickles. In bad cases of this sort prostration or suffocation carries off the patient in a few days.

After death the blood vessels are found to contain thin, black blood, which will not coagulate. In other cases, as mentioned in a previous article, fibrous clots separate the coats of the stomach as well as the muscles, and are generally distributed over the mucous surfaces.

Treatment.—There is a fair hope of recovery when the swelling is confined to the limbs, and even when the head is swollen to a slight extent; but when, instead of appearing externally, the extravasation is poured out on the mucous membrane of the lungs or bowels, the case is very hopeless. So irritable are the bowels that even very moderate doses of purgative medicine cause dangerous irritation; so that a laxative condition must be produced by clysters and draughts of linseed tea.

Saline diuretics must be given to counteract or remove the faulty state of the blood, and tonics and stimulants early and liberally used to support the strength. For this purpose a combination of—

Solution of the acetate of ammonia	-	Two ounces.
Turpentine	-	One ounce.
Tincture of the chloride of iron	-	“

This may be given three or four times a day in a pint of water, ale, or gruel. Or, instead of this, give the following night and morning—

For one ball	{	Sulphate of iron.	} Two drachms of each.
		Gentian.	
		Camphor.	
		Saltpetre.	

Besides medical treatment, an airy house is essential, with perfect rest, warm clothing, bandages, and occasional dry friction to the legs; plenty of good, nutritious food offered frequently, varied often but never forced upon the animal, and never, when it is refused, allowed to remain long before him. To promote absorption of the extravasations and swellings, as well as to prevent sloughing, bathe the mouth and nostrils frequently with tepid water and vinegar, and subsequently moisten them with equal parts of Goulard's

extract and arnica diluted with forty parts of water. When sloughings do occur, as they do frequently, especially about the limbs, tepid water dressings, mild astringent applications, and good food afford the best hopes of cure.

When the lips are so tumefied as to interfere with eating, they must be diligently fomented and scarified, for all treatment will be useless if the creature cannot eat.

The swellings about the sheath and limbs, as well as the head, must be scarified. If suffocation ensues, perform tracheotomy.

GLANDERS.

Cause.—This is the most loathsome and malignant disease to which the horse is subject. It seems to exist as one of the chief scourges of the equine race, and at the same time a severe penalty on man for long continued neglect and ill-treatment of this animal. This is a fearful complaint when communicated to any of the human species, and is then known by the name of equinia. Like purpura, this disorder seldom, if ever, arises as a primary and independent disease; it is generally the sequel or termination of several diseases, some of which may not have shown very marked symptoms at the time of their invasion, except general debility.

There are two forms of glanders, the acute and chronic. The latter is more to be dreaded than the former; it may exist for some months, or even a year or two, spreading the contagion amongst other horses, without any decision by the owners of the nature of the disorder or where it may end. The acute form runs its course very rapidly; the symptoms in this case are very well marked, and by proper precautions the danger of the propagation of the disease might possibly be stopped in time to prevent further mischief. The causes which produce glanders are pretty numerous, but it may be stated in general terms "that they include everything that impairs the integrity of the blood, such as bad feeding, over-work, close, foul, damp, or over-

crowded stables." Glanders also is the sequel and termination of influenza, strangles, and other diseases, especially when prolonged either by neglect or mismanagement. Any man who has seen numbers of horses in the late epizootic must have seen cases of glanders as the termination of that disorder.

There is wonderful resemblance between this equine disease and some diseases of mankind, such as syphilis and tuberculosis. It is like syphilis, for it is a specific disease, it has a specific virus and a specific inflammation, and produces by inoculation its own kind, and no other. Nor does the likeness end here. 1st. Each of these disorders exhibits a peculiar plan of morbid process. 2d. Each depends upon a peculiar cause. 3d. The effects of that cause are altogether irrespective of its quantity or the extent of application (the smallest particle of the virus of glanders absorbed into the system is sufficient to produce the disease; the same applies to syphilis). 4th. They are especially diffusible from one part of the body to another. 5th. They exhibit different stages of morbid process, and so forth.

Its analogy with tubercular disease might be easily traced (if space permitted) by the deposition of tubercle on the lung tissue, septum nasi, &c. The inflammation of each is followed by abscesses, ulcerations, and other disorders of the skin, mucous membrane, glands and bones, showing great obstinacy in their career. This tubercle is seldom, if ever, absorbed, either in phthisis or glanders. The contagiousness of this disease, both to man and beast, is acknowledged by all people. Horse proprietors often fancy that when they have made their stables scrupulously clean after the removal of an animal who had the disease that all danger is then past; but this is very often a fallacy. When once the virus is strewn about and lodged in a stable it is not so easily dislodged as are some poor tenants. It is well for the community that there are some men who make "neglect and cruelty to animals" in every form their special business, for

they are really friends to the community—friends to the animals with four legs, as well as to the owners of horses themselves, who are supposed only to have two legs. Therefore societies for prevention of cruelty to animals ought to receive encouragement from every noble and patriotic citizen.

Some people, in their simplicity, suppose that glanders is merely a local disease situated in the frontal sinuses, and hence sending out a discharge through the nostrils. I trust that what has been said already, as well as what follows, may dispel that illusion.

Symptoms.—The signs and symptoms of this filthy disorder in its earlier stage are not very prominent. The chronic form is most insidious and slow in its operations; here we have no violent and visible manifestations of its ravages. An animal having this form of the disease may live for two years, and might possibly be the cause of spreading its virus and extending its deadly effects to a thousand horses, which might all be dead in a few weeks, while the poor brute itself lingers on to a slow but certain death. Only one animal in eight or ten contracts the disease directly by contagion; this calculation has been arrived at after long and patient examination. When they do it assumes the acute form of glanders, and as a general rule the creature dies within a week or ten days after ulceration of the mucous membrane of the nostrils becomes visible.

The constitutional disturbance and symptoms are mostly the same for both, only intensified in the acute form. We have already said that the inflammation connected with glanders is no ordinary, but a specific inflammation; it is slow in its ravages, as well as destructive to every tissue, and it is impossible to repair them. Ordinary inflammation, say of mucous membrane, ends in suppuration and the formation of pus, which, when finally absorbed, the patient regains its health. Not so, however, with this species. The constitution is so dreadfully depressed and debilitated that

the lymph poured out as the effects of this inflammation partakes of the faulty state of the system, is weak and deteriorated—unfit for organization, unfit even for the formation of healthy pus. It irritates and inflames every tissue with which it is in contact, and causes irregular sores with indented edges, which discharge thin, irritating pus; these are called ulcers, which is the effect of molecular death. From this short explanation it can easily be understood that as this inflammation extends there is found in its track abscesses and ulceration of the mucous membrane of the skin, the lungs, the glands, and even of the bones.

Having very briefly and imperfectly explained the nature and general symptoms of glanders, a few words on the more visible and minute signs and appearances which the disease manifests.

Most horsemen look on the membrane of the nostrils for the first symptoms of this disorder, but the ulceration may be situated so high up as to defy all our efforts to distinguish it. The discharge from the nose may also mislead, for that is common to many diseases. The first discharge is scarcely noticeable, and generally flows from one of the nostrils; at first it is a slight watery defluxion; this changes to a copious transparent excretion; then to the third or formation of unhealthy pus, which has generally no perceptible simile; and lastly to the ulcerative stage. The membrane, when thus affected, is found to be covered with straw-colored ulcers. "Previous to any discharge the membrane in the first instance is thickened, and the neighboring lymphatic glands and vessels are enlarged and painful. One or more minute pustules appear, first of a red and afterwards of a yellow color, and commonly situated on the vascular septum nasi. After a time they burst, and the pus escaping leaves a hole or ulcer, with rugged, thickened, inflamed, undetermined edges. The ulcer discharges a sticky, greenish, unhealthy pus. This ulceration, once begun, goes on until the membrane is destroyed and the system poisoned by the

absorption of this ichorous discharge. Along with these symptoms the nose occasionally bleeds, the eyes are prominent and watery, the coat rough and staring, the breathing snoring and somewhat disturbed, the pulse soft and easily accelerated. Together with these symptoms there is a suffocating, choking cough, the animal rapidly loses flesh, the excretions have an intolerable odor, and lastly, the lymphatic glands and vessels are enlarged, hard and painful. This description applies with more accuracy to the acute form of glanders. In the chronic state the ulceration is slight, while the animal with generous diet has a healthy coat, and may perform moderate work.

Treatment.—The risk of human life, and the hopelessness of the case, makes this disease no subject for treatment. The smallest particle of this discharge of ichorous matter blown into the eye, or coming in contact with an abraded surface of any part of the body of man or beast, is quite sufficient to convey the disease. Therefore the only treatment is to take of lead a two-ounce ball, and as quickly as possible put it through the animal's brain, and have it buried deep under ground.

FARCY.

Cause.—This disease is only another form of glanders; the seat of both diseases is in the blood. The least alteration in the character of this vital fluid always produces the most alarming consequences. The identity of these disorders has long since been established.

The chief difference between farcy and glanders consists in its site, or the particular parts of the animal's body which manifests the ravages of this terrible disease.

Symptoms.—The specific inflammation of farcy, instead of ending in suppuration, terminates in ulceration. The degenerated lymph poured out from the inflamed glands and vessels soon undergoes important changes; the over-lying skin soon becomes absorbed, and farcy buds (or ulcers) soon

appear on the surface. The ulcers are similar to those found in the nostrils of glandered patients; these sometimes spread over the whole surface of the skin.

The superficial absorbent glands and vessels of the hind limbs are chiefly the parts attacked. The inside of the thighs, if examined, will present abrupt, indurated, and painful swellings resembling those of erysipelas, but more tardy in their progress; these remain sometimes for several weeks before the skin is broken. Farcy in many instances precede, and in other cases accompanies glanders. Should we proceed to feel and examine the parts more particularly apparent to the senses, we shall find lines of firm, corded, inflamed absorbents, with knobs over the thickened valves, these run from below upward, the hair along their course becoming rough and bristling.

Treatment.—These ulcers, although hopelessly incurable when located in the nostrils, are more manageable when affecting the limbs. They must be scarified with a firing iron, which should besides being gently run over the contiguous irritable parts, be also dressed with an ointment of the red iodide of mercury, and washed daily with diluted carbolic acid.

To purify the system (if possible) several remedies must be employed. The bowels must be kept open by two drachm doses of aloes, given occasionally; the kidneys, acted on by the use of two ounce doses of sweet spirits of nitre, every second day; and the skin by comfortable clothing and good grooming. In addition to these a pure ventilated atmosphere and perfect cleanliness are also essential. Plenty of good food, such as bruised oats, oatmeal gruel, linseed tea, carrots, clover, or whatever the beast will eat, must be given.

Tonic medicines must also be administered. For this purpose take of

Twice a day { Sulphate of Copper, } One drachm each.
 { Iodine. }

This prescription may be changed on the third or fourth

day for the following : pretty large dose of Fowler's solution of arsenic, in a pail of water will do good service.

The limbs when hot and tender, must be fomented with warm water, and no discharge from the ulcers allowed to remain on the sound parts. In fine weather, a few hours liberty in an open field (away from other beasts) will expedite recovery.

RHEUMATISM.

Cause.—This fugative disease generally depends on some vice of development and nutrition, which perverts the general state of the organs and functions. As a result of this state of things, there is an accumulation of various excrementitious matters in **the blood**, such as lactic acid, fibrine in excess, &c. It very rarely arises as a primary and independent disease, but usually follows or accompanies influenza, and other disorders.

It is not a local but a constitutional derangement, and constantly changes from one part of the body to another, and leaves the structures once affected very prone to subsequent attacks.

Rheumatism consists in a specific inflammation of certain tissues; it exhibits its own plan of morbid process; it depends upon the peculiar causes already mentioned; it is diffusible from one part of the body to another; and it is lastly self limited, the morbid process dying out after a certain time.

The tissues chiefly attacked are the coverings of muscles, tendons, and ligaments, the fibro-serous textures of joints, the valves of the heart, and, lastly, the structures of the larger blood vessels. This disease is decidedly hereditary, and may be excited and developed by various causes.

Symptoms.—Rheumatism is generally ushered in by acute febrile symptoms, with a full, firm, and unyielding pulse, the respiration and temperature are moderately increased, while the pain the creature suffers is most intense.

This disease has a decided preference for the neighborhood of joints; this is seen in the swelled and inflamed appearance of those parts, in some cases preventing the animal from standing, the torture is so great—this gives rise to lameness, which is sometimes troublesome to detect. During attacks of this kind there is an increased secretion of synovia (or joint oil); there is also considerable enlargements, which are bulged out, soft and puffy.

The disease is confined to no particular locality, and constantly changes its place—this week it may be in fore legs, next week in the hind legs. Occasionally is located in the neck, producing stiffness and inability to move the head—then it is vulgarly called the chords; sometimes in the fibrous coverings of the muscles of the back, when it is called lumbago, and may eventually extend to the pericardium and valves of the heart.

This disorder of the horse, when it comes as a sequel to other diseases, is often hard to diagnose, very obstinate and intractable to remedies, and generally brings very little credit to the veterinary surgeon. In some rare instances long exposure to cold, with bad feet, induces a kind of rheumatism.

Treatment.—There is little use in external remedies without trying first to remove the cause. We have shown that the seat of the disease is in the blood; therefore to abate the constitutional symptoms should be the first endeavor. No bleeding is necessary. Give the animal a ball consisting of four to six drachms of aloes to mildly operate on the bowels. Then the following:

Take of	{	Oil of turpentine	-	-	One ounce.
		Saltpetre	-	-	Four drachms.
		Pulverized colchicum	-	-	One drachm.

This is one dose. Give it in gruel night and morning for at least a week. Clothe the body, bandage the limbs, and if the creature is so bad as not to be able to stand, put him in slings. Together with the above treatment, the limbs

may be rubbed well with a strong linament of ammonia, or apply mustard to the affected parts. Before applying them let the parts be well rubbed down. In cities where hot vapor baths can be had we can highly recommend them.

Proper attention to feeding and nourishing the patient will also be required. As the animal improves give tonics and stimulants, such as ammonia and gentian.

WEED OR CELLULITIS.

Cause.—This lesion, although supposed to be confined to either of the hind limbs, depends upon a constitutional derangement, and therefore we place it among the Blood Diseases.

The first indication of trouble is observed in one of the hind legs (generally the left); there is considerable swelling, heat and tenderness, along the inside of the leg so affected. The causes producing this state of things are various, but it is generally observed that animals highly fed and irregularly worked, or creatures at constant hard work, left suddenly without work or exercise; both of these conditions may lead to Weed or Cellulitis.

Similar effects are also seen following exposure to wet, when the secretions of the skin are arrested, especially in horses of low breed and coarse limbs, as well as those in which the muscles are soft and flabby, and the legs round. These remarks apply particularly to many of the coarse animals brought from Pennsylvania.

How does this swelling and lameness supervene, and what are the constitutional disturbances which cause these symptoms? To these questions we answer: that when animals are irregularly worked, or not worked at all, and at the same time highly fed, under these circumstances the food is assimilated in larger quantity than the wants of the system require; as these exists for some time, the chyle so formed accumulates in the absorbent glands and vessels, which consequently becomes irritated and inflamed. Or we may ex-

press the same facts more simply and briefly thus: this swelling and lameness called Weed is produced by a disturbance in the balance which naturally subsists between the waste and repair of the system, and the supply of material to repair that waste. After this round-about and imperfect explanation, some idea may be formed of the nature of this troublesome disease.

Symptoms.—The first noticeable sign of this lesion is inflammation, beginning in the glands high up between the thighs, and extending along the absorbent vessels. This inflammation gives rise to swelling, heat and tenderness; these are observed more particularly along the inside of the limbs. Motion of any kind is very painful to the parts affected, and lameness is the result. The febrile symptoms which accompany these symptoms are not very well marked, but there is usually a full, bounding pulse, and some increase in the temperature of the body.

I had a case of this kind last summer. The animal was a large, coarse Pennsylvanian Horse, with very coarse limbs and a large head. As the inflammation continued it led to the formation of an abscess along the inner side of the left hind leg; the swelling extended to the sheath and neighboring parts. When these were in a fit condition I scarified them, and at least three abscesses formed before the animal finally recovered. This creature was highly fed and seldom worked, which is one of the many producing causes of weed.

Treatment.—Some practitioners in such cases take several quarts of blood from their patients, but as a general rule no such immediate and severe measure is necessary. We can accomplish equal, if not better, results from a good dose of physic. The annexed purge will do very well:

Aloes in solution	-	-	Six drachms.
Calomel	-	-	One drachm.

At the same time let the limb be well fomented with warm water for a long time, and then apply a flannel bandage. If

abscesses form open them at the proper time. When recovery takes place give an ounce of saltpetre once a week, for a fortnight, in a pail of water.

PROFUSE STALEING (POLYURIA).

Cause.—This can scarcely be called a disease, but a temporary annoyance to the horse and his owner; although, if neglected, it may lead to fatal consequences. The exciting and producing causes are many. Excessive doses (especially in their pure state) of turpentine, saltpetre, sweet spirits of nitre, and other drugs given by stablemen and others, most frequently irritate the bladder, and produce this excessive flow of urine. In very many other instances it is connected with indigestion, when it depends on an impoverished state of the blood. Sometimes, in hot weather, when animals are hard worked and drink inordinate quantities of water, this state of things is observed. Profuse staleing has often followed the use of musty hay or oats, or grain that has been kiln dried.

Faulty feeding of all kinds aids in its development, as well as debilitating diseases, such as influenza and strangles, or by suppression of the secretions from exposure to cold, or from drinking of water very freely when heated or exhausted.

Symptoms.—The most prominent are excessive and insatiable thirst—eight and ten pails a day are not uncommon—while the quantity passed off by the kidneys exceeds what has been consumed. The urine is very abundant, clear, colorless, free of sweetness, and so deficient in solid matter that its specific gravity little exceeds that of distilled water. If these symptoms are neglected and allowed to continue the creature rapidly falls off in condition, his coat becomes rough and staring; his appetite, at first voracious, suddenly fails; the blood becomes deteriorated, and if unchecked may end in nephritis or glanders.

Treatment.—Entire change of food is necessary, such as boiled barley, scalded oats, green food, apples and carrots.

Mix with each feed two drachms of bicarbonate of soda, to stop the thirst and correct indigestion, and give as little water as possible. If the bowels are constipated give from four to six drachms of aloes in solution. As remedial treatment give the following:

Give this dose three times a day in water.	{	Iodide of potassium	-	One drachm.
		Iodine	-	One scruple.
		Carbonate of soda	-	Four drachms.

Or instead of the above give one ounce of Fowler's solution of arsenic in a pint of water, morning and evening. Besides all that has been said, let the animal be well groomed and rubbed all over to relieve the symptoms.

SCARLATINA.

Cause.—This disease also comes under the head of blood diseases, although it is rather an uncommon one in the horse. However, as there are odd cases now and then met with in our practice, it is well to be acquainted with its symptoms and the mode of treatment. It is an eruptive fever, like strangles, erysipelas, &c. Any cause or causes that debilitate or reduce the vital powers of the animal system may, where the predisposition exists, lead to scarlatina. It very often occurs as a sequel to strangles or influenza; I have seen odd cases supervene from the late epizootic.

This disease generally runs its course in twelve or fourteen days, when good nursing and proper attention (in ordinary cases) expedites recovery.

Symptoms.—This disorder is ushered in by dullness, febrile symptoms, and "in most instances with a sore throat. The animal is weak and unwilling to move; there is some muscular debility; the skin dry, harsh and hot; The glands about the head and neck are swollen and tender; the bowels and kidneys act very irregularly; the breathing is quickened and the pulse small, it may run up to 60; the temperature also increases to 102°–103°." These symptoms reveal the constitutional disturbance. In two or three days or there-

abouts the mucous membrane within the nostrils and the lips are studded with scarlet spots about the size of a pea; these, after a little while, run together. When these become confluent there is formed an effusion of blood under the skin called ecchymosis. In most instances of this disorder similar spots appear over the body, but chiefly about the head and neck, and are seen particularly in light colored horses. In about a fortnight or three weeks the hair falls from these spots on the skin, and the cuticle scales away, leaving bare patches. Besides these symptoms there are others. Dropsical swellings appear about the head and legs; these are not so large as in purpura, neither are so hard and painful as those of erysipelas; they are generally soft and pitting to the touch.

Treatment.—The principal treatment at the outset of the disease is rest and good nursing, such as may prevent untoward complications. The first thing required is a cool, comfortable, loose box-stall, if possible. Bandage the legs and put a linen cover over the body of the animal; outside this linen wrapper a warm rug will be required. The best medicines in this case are the following. Take of:

Muriate of ammonia	}	one and a half ounces of each.
Saltpetre - - -		
Gentian - - - - -		
		three ounces.

Make into six balls; give one night and morn.

After a few days change this to the following treatment:

8 balls	{	Carbonate of ammonia	-	}	two ounces of
		Gentian - - - - -	-		

Give one of these balls night and morning.

DISEASES OF THE BRAIN AND NERVOUS SYSTEM.

INFLAMMATION OF THE BRAIN, OR, PHRENITIS.

This is rather an uncommon disease in the horse, but we may have slight congestion of the brain every summer in cases of sun-stroke from the excessive light, heat, and over-exertion. Phrenitis is characterized by dullness and sleepiness; these symptoms soon pass on to excitement and madness, which symptoms may be mistaken for stomach staggers.

In the case of phrenitis the pulse is strong and firm, not slow and oppressed, as in stomach staggers; the animal, besides, is feverish, more easily roused, and when roused is very excitable. As the sleepy symptoms, which continue during the stage of congestion, pass off, the eyes become red and staring, the pulse quickened, while the animal unconsciously dashes himself about and endeavors to run down any one that comes in his way; the creature becomes unable to balance himself, and soon falls, blowing, panting, and struggling. The symptoms generally extend from one to two or three days. The pia mater is the seat of the disease, and is found after death rough and yellow, with lymph extravasated between it and the arachnoid; there may be also serum at the base of the brain besides the lymph.

Treatment.—Bleed at once to the extent of three or four quarts; the application of ice to the head, tied up in a cloth or bag, will also do much good. Avoid all blistering, &c., but have plenty of assistants to prevent the animal from injuring himself. In addition to this treatment a dose of aloes, along with laxative clysters, thrown up the rectum, will materially assist in the recovery.

EPILEPSY, FITS, OR THE FALLING SICKNESS.

This disease very rarely affects the horse, but is often seen, especially in dogs and overfed pigs. The senses of sight and of hearing, and of all the brain functions, are suspended, and the creature contorted with involuntary spasms.

Besides these symptoms the jaws become closed, the animal falls to the ground, with the tongue protruding, the eyes rolling, and the legs thrown about.

The attack usually passes off within ten or twenty minutes, leaves the animal dull, and is very apt to return. The disease depends upon some abnormal state of the brain, generally resulting from debility, plethora, constipation, or intestinal worms.

MEAGRIMS, OR VERTIGO.

This is the term usually applied when a horse at work reels, and then either stands for a minute dull and stupid, or falls to the ground, and lies there for a few minutes partially insensible.

These attacks are usually periodical, are most frequent during hot weather, and especially when the animal is drawing a load up a hill, or else exposed during heavy work to the full rays of a hot sun.

Liability to meagrims constitutes unsoundness, but unfortunately is not, in ordinary circumstances, detectable by any known test. It differs both from chorea and epilepsy in the absence of spasm, and most probably depends upon the temporary stoppage of the circulation, or from the presence of tumors.

In many instances it has been traced to the presence of tumors in the choroid plexus, sacculous deposits in the velum interpositum, and enlargement of the pineal gland, and may also, in other cases, result from the circulation of some blood poison.

Horses subject to this disease should have a collar specially fitted to prevent any pressure on the blood vessels.

RABIES, OR HYDROPHOBIA.

Cause.—This disease seems to arise spontaneously in dogs and other members of the canine and feline species, and is communicable (which fact has been attested by too many sad proofs) to the human species, by their saliva; and also to the horse, cow, and sheep. When man is inoculated with this virus there is always (a real or supposed) dread of water as one of the symptoms of the disease, and hence the name of hydrophobia. It is of great importance that the early signs of this disease should be known in the dog, in order that this dreadful disorder might be detected in time, and so hinder the animal from destroying human life.

Symptoms.—Amongst the first symptoms are: excessive fawning and craving for sympathy, as manifested by the strange conduct of the creature; as the disease advances, there is great irritability and snapping at invisible objects, and a peculiar doleful howl. In addition to these symptoms there is thirst; perverted or depraved appetite; paralysis of the muscles of deglutition, interfering with the swallowing of food.

But although the creature snaps almost involuntarily at objects near him, and quarrels with his neighbors, he is seldom violent unless annoyed or vexed.

When animals or men are bitten by a rabid dog similar symptoms appear. In the horse, the animal trembles or staggers; gets rapidly furious; sometimes endeavors to bite; but he more generally attempts to run at, and trample down those persons that come in his way.

The **symptoms** of hydrophobia usually show themselves in from two to eight weeks after the animal or man has been bitten. Besides other less important post-mortem appearances, the Eustachian cavities and back part of the throat become highly vascular, as well as the membranes of the brain and upper part of the spinal cord.

Treatment is never attempted in our practice, as the danger is too great, and the chances of success give no

encouragement to make the attempt. It is very different, however, in the human species. When a person is bitten by a rabid animal, and the poison is allowed to be carried through the system, no medicine will do any good; therefore the only effectual remedy known is to get rid of the poison, if possible, the moment the person is bitten. This may be done in several ways: first, by putting a tight bandage around the part, and immediately squeezing and sucking the wound for several minutes; or by pouring water continuously upon it; and, lastly, employing a caustic wash.

LOCK-JAW, OR TETANUS.

Cause.—There are two forms of this disease. Traumatic tetanus generally arises as the result of some injury, such as a pricked foot, saddle galls, and wounds in the neighborhood of nerves and ligaments. A very fine punctured wound, scarcely noticeable, is very often followed by lock-jaw; whereas an injury from a large spike of iron seldom has a sequel of this kind.

The idiopathic form of lock-jaw is caused by exposure to wet and cold, by intestinal worms, obstinate constipation, &c.

This disease occurs in all animals, but particularly in horses and sheep. It consists in a peculiar irritable state of the spinal cord, producing (tonic) continued spasms of the voluntary and involuntary muscles.

Symptoms.—In this disorder of the creature the nose is poked out, the tail upraised, the muscles hard and rigid, the gait straddling, and the bowels constipated. But the most prominent and diagnostic symptom is the protrusion of the haw of the eye called the *membrana nictatans*, while the tonic spasm of the muscles prevents the animal from opening his mouth or swallowing any kind of food. The symptoms in the lower animals are not confined, as in man, to one set of muscles, or one part of the body. They come on gradually, and reach their full intensity in three or four days,

while the more rapidly they are developed the more serious is the case.

Treatment—In this case is very unsatisfactory. In very many instances more good has been done by giving no medicine whatever, but simply keeping the creature in a cool, airy, darkened loose box-stall, and allowing no noise. Locking the stable and putting the key in one's pocket for two days has been tried; the perfect repose has done more good than medicine to restore the nervous system to a healthy state.

Besides this plan the following remedies have been applied after clothing and bandaging the legs:

Extract of belladonna	-	-	Four drachms.
Chloroform	-	-	One ounce.

This may be given in water every three hours (if it is possible to open the jaws).



DISEASES

OF THE

LOCOMOTIVE ORGANS.

Lamenesses—Including Founder (or Laminitis), Corns, Quitters, Navicular Disease, &c.

Exostosis—Spavins. Splints and Ringbones.

Injuries—Sprains, Capped Hocks and Elbows, Fractures and Dislocations, Open Synovial Joints and Cavities, Broken Knees, &c.

Wounds—Punctured, Contused, Abraded, Lacerated, Incised.

LAMENESS IN GENERAL.

These constitute a most important class of injuries, commonly named *Lamenesses*, in contradistinction to the *Sicknesses* of the Horse, or diseases of the feet and limbs. Lameness is the one symptom of these diseases most apparent to the senses of ordinary people, and hence they cannot understand how an animal may be lame without having any disease, or have diseased feet and limbs without any perceptible lameness. An exhaustive work on these and kindred injuries would require an octavo volume of 800 pages for their elucidation, and how to compress within the limits of a popular work in any lucid manner an understanding of their diagnosis and treatment is far from an easy performance. It will be necessary to digress a little from the plan of this little work to enter very briefly into a description of the structure and function of the different tissues which enter in the formation of the horse's foot. When we consider the

amount of money (\$500,000,000) invested in equine property in the United States, and how few Veterinary Surgeons are to be found in the country, it can be readily understood how important it is for stock-raisers, farmers and gentlemen to have some correct idea of the symptoms and treatment of the various disorders and injuries to which these animals are subject. It is the aim of the writer to supply such a work to the American public as may be safely referred to in all emergencies, and in the absence of qualified Surgeons.

There are several cogent reasons why particular prominence should be given to this class of injuries.

In the first place, there are more numerous cases of lameness than of any other lesion of the horse. Perhaps we may safely affirm that, for every score of sick horses there are one hundred lame ones. In the second instance, the different diseases and injuries of these animals are encumbered with such absurd names as convey no idea of their nature or treatment. I have seen medical men highly amused and perplexed when asking the names of these lesions, and what they meant, although familiar with most of them under their proper names.

The late Mr. Percival, V. S., in his works on Hippopathology, has explored those high latitudes of Etymology, and traced for us the origin and meaning of such outlandish names. From his researches it appears that John Bull, in the days of his childhood or stupidity, forged the names, and we hold him responsible for this beside other graver offences. In the last place, these injuries which try the skill of the most experienced surgeons are confidently left in the hands of stablemen or horseshoers, and the consequence is that more harm is inflicted in one hour than can be repaired in a month. When American gentlemen are asked why they employ such persons to tinker with valuable property, (and hand over noble animals during their sickness to ignorant stablemen or horseshoers to give what destructive agents they suppose to be right)? Should we repeat the same

query to the proprietors of the different stage lines or railroads, we invariably receive a most extraordinary answer from both parties, and that is, "These men have worked around horses all their lives, and therefore they are as well qualified to doctor horses as any surgeon." This answer we get from men in New York, Chicago, or California, and it is very hard to question either its authority or infallibility.

Should we, however, address the proprietor of a circus or hippodrome on the same subject (Mr. Barnum, for example,) he shall tell us that his men have spent their lives vaulting over horses' backs and other feats of horsemanship, and of course they are qualified to treat all cases of disease in the *horse* as well as any doctor. Of these two classes of persons, viz., those who spend their lives working around horses, and those persons whose chief business is vaulting over horses' backs, my own candid and unprejudiced opinion is, that the men who spend their lives vaulting over horses, must surely have better and more exalted notions of the treatment of sick horses than men who merely work around them.

However, there is a wonderful unanimity of opinion between these two classes of surgeons, (namely the men who spend their lives working around horses and the men who spend their lives jumping over horses), and that is, that very powerful remedies are always indicated in the simplest injury to which the horse is subject.

They often disagree as to the origin and diagnosis of the disease, but with regard to the remedies they are unanimous.

This may be readily accounted for when we glance at their text book. Most of the agents or prescriptions they employ are taken from a work entitled the "Quarryman's Pharmacy." They evidently believe that such agents as are good for blasting rocks must surely be good for curing lame horses.

Perhaps there are no class of injuries requiring such prompt and judicious treatment as diseases of the feet and limbs of solipedes, none more readily cured by timely measures, nor, on the other hand, more disastrous results follow from neglect

or mismanagement. The amount of horse property from these causes alone which is annually lost to the country is beyond the belief of persons not conversant with the subject. In human surgery the proverb is not more true than in horse practice, that—

“For want of timely care millions have died of medicable wounds.”

“L’occasion est urgente, le jugement difficile.”

LAMENESS IN GENERAL.—Lameness, as a symptom of disease, may exist either in the fore or hind legs, anywhere from the shoulder or hip to the foot, although it is more frequently seen in the fore than in the hind legs. This is true, especially when the lameness is a mere local injury, and not the result of constitutional derangement in such diseases as influenza or spinal meningitis. The various degrees of lameness have received, in horsemen’s language, the following names :

Local defects or injuries,	{ Tenderness, Stiffness, Lameness, Dead lame, Broken down.
----------------------------	--

When the lameness arises from constitutional derangement they call it weakness; it is caused by pain often of the most intense kind. When a horse *walks* lame he must suffer the most intense agony.

It is no easy matter sometimes to find out which limb the lameness is in, especially when it is a slight lameness. This is best discovered by putting the animal to a sharp trot to and from the person examining the animal. When the limb so lamed is found by the action of the horse, the seat of the injury may be discovered while he is at rest. When lameness is in either one or both of the fore feet there is a peculiar nodding or dipping of the head at every step, so that a person sitting in the back of a car, where he can only see the top or ears of the animal’s head, can say directly that horse is lame. When the lameness is in either or both hind

legs there is a curious dropping or jerking of the croup, so that we can easily discern that the lameness is in the hind legs. The leg on which an animal "drops" is not the lame one *but its fellow*. The nature of the lameness is next to be determined, but as this would lead us into the subject of examination for Soundness, in opposition to Lameness, we shall be obliged to pass on to our consideration of the different diseases of the locomotive organs.

In the treatment of these diseases by unprofessional persons there are several important facts not so much as dreamt of by these ignorant and presumptuous men, namely, that symptomatic fever accompanies most of these diseases, in some excessive suppuration, in others secondary hæmorrhage, some of which may end in gangrene of the parts, *or Tetanus*.

STRUCTURE OF THE HORSE'S FOOT.

The anatomical foot of quadrupeds (compared with man) extends from the knee (or wrist) of the fore leg (or fore arm) to the toe (or finger end), and from the hock (or heel) to the toe of the hind leg, the three pastern joints corresponding to the three joints of the middle finger. However, in point of adaptation and use, the foot may be considered as embracing only those parts within and immediately above the hoof of the horse. Should we compare the anatomy of the extremities of the horse with other animals we shall find that while the horse has only one finger (or toe) the elephant has five (the same as our own species), the hippopotamus four, the rhinoceros three, the ox-tribe two, the horse one finger (or toe), hence he has received the name of Solipede. In order that the general public and owners of horseflesh may have a better understanding of the structure and function of the different tissues which enter into the composition of this animal's foot, I shall very briefly name the external and internal, or the parts that can be seen without dissection and those that cannot.

External parts. The hoof consists of these parts, namely :

The wall or crust of hoof,

The horny sole,

The frog,

The lateral cartilages.

The wall is divided into—

The toe,

The quarters,

The heels and bars,

The superior or coronary border,

Inferior or solar border,

The horny laminae.

The sole includes (besides itself which forms the ground surface of the hoof)—

The bars, which are only parts of the wall turned backwards and downwards,

The frog and cleft of the frog,

The commissures and the arch of the commissures,

The frog stay.

The internal parts are made up of—

The coffin bone (or os-pedis),

The navicular bone,

The fatty frog or plantar cushion,

The sensitive laminae,

The insertion of tendons,

Nerves and blood-vessels.

Immediately above and around the top of the hoof is the coronary band, and underneath it a highly vascular tissue, of which I shall speak hereafter, called the coronary substance.

The three parts of which the hoof is composed can easily be separated either by maceration or boiling, namely, the wall, the sole and the frog.

The wall is all that part of the hoof that is visible below the hair when the foot is placed on the ground; it is thicker

and deeper at the toe, gradually decreasing at the quarters, until it is quite thin as it approaches the heels.

The wall of the hoof occupies nearly two-thirds of the front of the hoof, and in good shaped feet has an inclination of 45 degrees, any degree greater or less than this causes either weakness or malformation.

The quarters are the portions on each side, midway between the toe and heel, and are known as the inside and the outside quarters. The heels are two protuberant portions of the wall by which it is terminated behind.

The bars, we have already said, are only reflections of the wall in towards the centre of the foot on its ground surface. The bars can be easily separated from the sole by maceration, but they are inseparable from the wall. In unshod feet the bars have a direct bearing on the ground.

The sole fills the space between the wall and the bars. It is in the form of an irregular arched plate, the concave portion of which is turned towards the ground. It is firmly attached by its outer convex edge to the inner surface of the solar border of the wall, while its inner straight edges are attached to the bars. The centre of the sole is its thinnest part, and constitutes the summit of the arch. The outer and lower circumference of the arch, which is invariably the thickest and strongest, everywhere abuts against the sides of the wall. The object of this admirable arrangement is very apparent: at every step of the horse, as the weight is thrown upon the foot, the coffin bone descends and presses upon the arch of the horny sole, causing the arch to yield and descend, but as the sole abuts against the wall it presses the heels outwards, which considerably increases the surface on which the pressure is laid. No sooner is the weight taken off the limb than the wall springs back, and the sole regains its arched form. By this wise arrangement the step is rendered elastic, and all injury to the sensitive sole or plantain cushion is prevented.

The frog is a wedge-like mass filling the angular space

between the bars, and consists, not of solid horn, but of a series of elastic arches; the base of the frog lies between and connects the posterior curved portions of the hoof, and limits to some extent their action.

The elasticity of the step of the horse is the result of a most harmonious and complicated arrangement, namely, the elasticity of—

The sensitive laminæ,
The sensitive sole,
The horny wall,
The arch of the sole, and
The triple spring,

formed by the foldings of the frog and the manner of its union with the bars.

The internal parts of the hoof (or horny box) are the coffin bone, the navicular bone, the fatty frog (or plantain cushion), beside other tissues yet to be mentioned.

Immediately joining and below the short or lower pastern (*os coronæ*, which is nearly square in form) is the coffin bone (*os pedes*). This bone has a body and wings, and to these wings are attached the lateral cartilages of the hoof which are seen on the outside and form part of the heels. It is light and spongy in texture, perforated with numerous canals, through which numerous blood-vessels and nerves are abundantly distributed to the highly vascular tissues that surround it on all sides. Behind the coffin bone, and lying in its concavity, is a small bone of peculiar shape called the navicular bone.

We have merely named and glanced at the anatomy of the horse's foot; a complete scientific work on this subject would require a large volume itself. Our object in this little work is not so much the structure as the functions of those parts which are constantly the seat of disease, and come under our observation every day in diseases of the feet. The parts we have already described are only horny or bony tissues, which, except in cases of fracture, are seldom the seat of disease.

We now come to the vascular or sensitive tissues within the hoof, which are subject to so many diseases.

Molded upon the entire surface of the coffin bone is a thick villous, highly vascular and sensitive tissue, which is commonly called the "sensitive foot," but also having several distinct local names, according to the particular part it covers. This tissue is nothing more than an expansion of the dermis (or true skin), or it may be said to be a process from the skin, somewhat altered in its structure to adapt it to the secretion of horn; it is analogous in many respects to that part of the skin which produces the nails in the human species. This tissue has the following local names: when it surrounds the top of the hoof it is called the "coronary substance;" covering the coffin bone, the "sensitive laminae;" covering the sole, the "sensitive sole;" the frog, the "sensitive frog." This vascular tissue has for its function the secretion of horn; for this purpose it is thickly studded with secreting papillæ, and forms as well as repairs the horny wall and sole of the hoof. According to Virchow each papillæ corresponds to one of the horny laminae. The sensitive laminae, as it covers the coffin bone, is arranged in 500 or 600 folds side by side, for which reason it is called laminae. These sensitive folds of the laminae fit into the horny laminae, and form so many springs giving and reinforcing the elasticity of the foot. This tissue, when constituting the sensitive sole, averaging one eighth of an inch, is thinner over the frog and thicker over the heels, and is even more vascular than where it covers the coffin bone. It is closely connected with the fibrous tissue of the sensitive laminae in front and the covering of the heels and frog behind, and from it the horny sole and frog are secreted. The manner in which the wall of the foot is formed is the following: the outer layer of horn, which is firm, hard, and dark of color, is secreted and grows downward from the coronary substance; it is also thinner and tougher than what is secreted by the papillæ of the laminae. The inside layer of horn grows outwards from

and is secreted by the tissue covering the coffin bone; it is soft, thick, and light of color. These different kinds of horn, in a healthy foot, interlace with each other as they grow, and unite to form one solid substance. The union of these secretions forms a thick, elastic and strong body, to which an iron shoe can be safely nailed, and whereon the enormous bulk of the horse's frame may with safety rest.

We have already said that there is attached to the wings of the coffin bone the lateral cartilages; these give form, substance, and elasticity to the heels upwards. This widely distributed tissue passes downwards and fills up all the sinuosities, and takes strong attachments to the processes of the coffin bone. These lateral cartilages then pass horizontally inwards, passing over the horny sole and bars, and intimately unites with the sensitive frog or plantar cushion. This sensitive frog fits admirably into the horny frog, and forms a pad or cushion.

The immediate purpose of these cartilages are: 1st, The interposition of this elastic tissue between the hard hoof and the hard bone, and prevent shock and concussion as the foot strikes the ground; 2d, It equalizes the pressure of the bones of the foot on the broader surface of the hoof; 3d, It allows more play and motion to the heels at every step.

We thus perceive that within the horny box or hoof there are very different kinds of tissue, namely, fascia, cartilage, cellular, and fibro-cellular tissue, vessels and nerves, besides the coffin and navicular bones. Without some understanding of the structure and function of these sensitive tissues it is impossible to understand the seat and nature of the diseases to which the foot is subject, nor their successful treatment. As examples of the diseases to which these tissues are subject we may state here that when the coronary substance is divided by a sharp instrument or any accident, we have a division in the wall of the hoof to a certain depth; when it is lacerated or part of it torn away, false quarter is

the result; when there is tread or overreach injuring this delicate tissue we have excessive suppuration, and in bad cases false and excessive granulations which sometimes defy all treatment; when the laminæ is the seat of inflammation from overwork or other cause we have founder, fever in the feet, or more properly laminitis—this disease, if neglected, may terminate in seedy-toe or pumiced foot.

When the sensitive sole is pricked slightly, we have inflammation of the tissue which may end in necrosis, or tetanus; bruise of sole leads to corns; other lesions of the sole are thrush and canker.

Injuries of the sensitive frog, whether by puncture or otherwise, cause quittor; in general the seat of this disease is the frog; the product of the inflammation is forced upwards, and forms an outlet above the side of the hoof, which has received the absurd name of "quittor." The pathological name for quittor is fibro-chondritis.

Besides these there are diseases of the navicular bone and ossification of the lateral cartilages. The cause, symptoms, and mode of treatment indicated in each of these diseased conditions will be explained separately in their proper place.

Each and all of these vascular and delicate tissues are subject to disease from various injuries. When we reflect on the various kinds of severe work horses have to perform, the kind of roads they have to travel over, and the abominable styles of shoes in vogue in many cities, we can hardly be surprised at the result. As to the roads, they seem to have been constructed for the special purpose of breaking springs of carriages and permanently injuring the feet of horses. The shoes with which horses are shod are far too heavy, and too often the foot is made to fit the shoe, and not the shoe adapted to the particular shape of the foot.

Horses are trained to such different kinds of exercise and work, and, as a general rule, do not lie down as composedly as other animals, so that the feet seldom have a chance of that rest and relief which tired nature demands. We have

the trotting horse, which batters his feet on the hard stones at a terrible rate, and in order to give him high action, there is, in addition to the iron shoe (which is so many pounds weight), another lovely invention, which consists of a piece of leather strapped around the pasterns and containing so many ounces or pounds of lead as the caprice of the owner requires. No doubt, there is high action for some time, but the consequence is that one of these horses will wear out two pairs of feet in three or four years.

As a racer, the animal has to strain every nerve and sinew; so that sprain of the tendons or rupture of some important part is not unfrequent. The truck horse, as well as the hack for carriages, is constantly on his mettle, and often beaten without mercy or humanity. Thus, as an animal of action, labor, and speed, it is no wonder that there are so many diseases of the feet and limbs.

ACUTE LAMINITIS.

FEVER IN THE FEET, FOUNDER.

This disease of the horse is supposed to be known by every man that works around stables, every coachman or horseshoer knows all about its seat, and nature, and each of these has a remedy which is powerful if not efficacious. It is hoped that from the explanation given in a former chapter as to the structure and function of these parts which are the subject of injury, it can be easily understood that it is not every inexperienced person who understands the treatment of this and kindred diseases of the horse's foot. We understand by Laminitis inflammation of the laminae which covers the coffin bone; but in nearly all cases of this kind the inflammation is not confined to this alone, but extends to the whole of the sensitive foot. This tissue is confined between the coffin bone and the horny hoof, and this fact of itself considerably aggravates the inflammation and the products of that inflammation.

FEVER IN THE FEET.—By this we express the symptomatic fever that always accompanies this disease, of which these ignorant persons imagine that it is purely local, and that the system in general is unaffected, which error is contradicted by the indications of the pulse, respiration and temperature, all of which are considerably increased.

FOUNDER.—This expression denotes the utterly helpless condition of the horse by which he is brought to the ground, (*fundus*,) *grounded*, totally disabled for the time.

Percival quotes Chaucer in confirmation of the origin and meaning of the word,

“His hors lepte aside and foundered as he lepte,”

that is, fell to the ground, as a ship is said to founder.

Horses are by no means the only animals subject to this disease. Steers and milk cows, driven long journeys, in hot weather, are often attacked the next day with fever in the feet, and require to be treated accordingly.

There are *three forms* of this disease, ACUTE, SUB-ACUTE, and CHRONIC LAMINITIS. We may briefly state (for long articles are tiresome and hateful), that by these several expressions are meant the different degrees of inflammation to which these parts are subject. These vary in their intensity from simple congestion of the parts to the most severe and disorganizing inflammation. In the chronic form, there is enlargement of the blood vessels. The sensibility of the parts are increased. There is heat, redness, pain, and swelling, which render animals very irritable, but without exudation, which is the product of ordinary inflammation. I need hardly say that an animal affected in this way is of little use to his owner, and the most merciful thing to do is either not to work or destroy him.

It is only in rare cases that there is an attack of laminitis in which both the hind and fore feet are together the subject of acute inflammation, and only once in a lifetime do we meet a case where the hind feet alone are affected. Therefore we may suppose that when an animal is said to be

founded we expect only to find the fore feet involved, although in some instance the hind feet suffer from the additional burden cast upon them.

The **Causes of Laminitis** are various and easily understood. In the first place we may state that young horses newly brought from the country, where their feet are mostly in contact with cool clay, these when taken into cities are put to severe work on the hard roads without any preparation, especially if the weather is hot. (Animals treated in this way generally have an attack of acute laminitis). Examples of this sort are of everyday occurrence. In the second place, animals with high stamping action, such as trotting horses, after battering their feet for several hours on such material as the Belgian blocks with which our streets are paved, are not unlikely to have an attack of this kind. Stress and violence done to the feet by whatever method are usually accompanied by overheating and exhausting of animals. When in this condition they are allowed to stand exposed to cold or damp, or worse still, given long drinks of cold water. When these things are permitted it is no wonder that the delicate tissues within the hoof are the seat of acute inflammation. In the third place, excessive feeding or gorging on nutritious food, such as oats, especially in young and plethoric animals, has often caused this disease. The history of many of these cases is that animals breaks loose at night, and eat to excess such grain as barley, rye, or wheat, and the next morning are found with fever in the feet. In the fourth instance, inflammation of the lungs or bowels may change its seat and attack the feet; this is called *Metastasis*. Hence we perceive that laminitis may have a constitutional as well as a local cause operating to produce the disease. In the fifth and last instance, it may follow from standing for a great length of time on railroads or steamboats, without a chance of lying down when the nervous system is exhausted, and it also follows attacks of rheumatism and of influenza.

Symptoms of Laminitis.—The acute form of this disease, as a general rule, comes on rather slowly and is chiefly confined to the fore feet. Horses, after a hard day's trotting, hunting, or working, during which the feet are more or less violently exercised, are usually seen the next morning suffering from this disease. Hours before the animal has shown the peculiar symptoms of founder his gait is changed, he is said to fumble, by trying to tread more on his heels than on his toes; but this is not always manifest. The time and symptoms vary in many instances. When called to see a case of this kind, the first view of the patient is often enough to diagnose the disease, without putting a hand on the patient, especially if he is in a standing position. The animal is trembling or quivering all over, from the extreme violence of the pain; the eyes are glaring, the nostrils distended, and the flanks agitated to an unusual degree. In order to relieve the agony he brings the hind feet as far under the trunk as possible, to take the pressure off the fore feet, which are thrust forward to an unusual degree. Should we urge or force the creature to move, he shows the greatest unwillingness. This he does by shuffling the hind feet under him, and the effort is accompanied by blowing and panting, as he makes a sort of timid leap forward. When the inflammation extends to the whole four feet, the symptoms are more aggravated, and the creature is more at ease lying down.

As we proceed to a local examination of the parts affected, we shall find there intense inflammation. Placing the hand around the hoof, or on the sole and frog, they are hot to the touch, even though the wall and sole are so thick, which facts show the violence of the inflammation. Throbbing of the pastern arteries is another well marked symptom, for they pulsate violently under pressure. Besides these local there are the constitutional symptoms. These are indicated by the pulse, respiration and temperature, and give rise to the symptomatic fever, which in greater or less degrees al-

ways accompanies Laminitis. The pulse often rises from 70 to 80 beats per minute. The respiration, increased and hurried, is easily seen by the dilatation of the nostrils and the heaving of the flanks. The temperature increases anywhere from 101-5. These indications of high fever considerably complicate the condition of the creature.

The **Symptoms of Fever** are known by

The excited and anxious look ;
 The hot breath ;
 The parched mouth ;
 Hurried respiration ;
 Muscular debility ;
 Diminution in the bulk of the excretions ;
 The high pulse.

These symptoms, together with the increased heat of the whole body, and the continual desire for change of posture, manifest the constitutional disturbance, (which has to be combated in our treatment,) as well as the local inflammation of the feet, which is the seat of the disease.

Terminations of Laminitis.—As we proceed to treat of the different terminations of this disease, it may not be out of place to bring to our remembrance the structure of the parts affected. Here we have a highly vascular tissue which is the subject of acute inflammation. This is tightly compressed between the horny hoof and the coffin bone ; beside that part which is pressed against the sole while the creature is in a standing position. In this case, where the laminae is firmly bound down by the unyielding hoof, there is no room for exudation and swelling, and consequently the pain and fever are considerably aggravated.

The acute form of this disease may have at least five terminations :

First.—It may terminate in an entire disappearance of all the symptoms, and complete recovery. This sometimes fortunately happens if the case is taken in time, when rest

and proper measures are used. This most desirable result is called **RESOLUTION**.

Second.—It may pass into a chronic condition, in which all the symptoms are of a mitigated character. In such instances, when the animal is quiet, the pain is slight and the heat is little, if any, in excess of the natural state. If the animal is allowed rest upon a soft floor, or is turned out to grass, the lameness is not very apparent; but if driven on a hard road at any speed the lameness is soon discovered.

Third.—The inflammation may end in suppuration, which may be confined to a portion of the soft tissues of the foot, and eventuate in a partial recovery; or it may be so severe and extensive as to force asunder the horny and the sensitive laminæ. Under those circumstances the hoof may be lost; or, if not, the coffin bone may be displaced from its attachments and fall down, producing what is known as pumiced foot.

The fourth termination of laminitis is what is known as metastasis. This occasional change of seat of a disease is sometimes seen in our practice. The inflammation in these cases may leave the feet and attack the pleura, lungs, or brain.

The fifth and last issue of this disease, when the inflammation is very acute and intense, is mortification. In such instances death soon relieves the creature from its sufferings.

Treatment of Laminitis or Founder.—This may be considered the most important part of the subject. If we consider the tens of thousands of animals in the United States alone that are afflicted with this disease every season, and contemplate the number that are hopelessly ruined by quackery, it is something worth investigating, for it is a national loss.

In recommending the latest and most improved treatment, namely, "What to do in such cases," it may be very proper here to state our disapproval, or, in other words, "What not to do in laminitis." For this purpose our know-

ledge of anatomy, physiology, pathology, and therapeutics are required in this as well as every other malady of the horse. Therefore in this instance we say—

Don't	{	bleed <i>in every case</i> .	
		seton the frog.	
		rasp away the crust or sole.	
		blister the coronet.	
		open the toe or plantar vein.	
		)	give large doses of aloes.

The six cautions will be sufficient for all sensible men.

In this disease we have, if possible, to remedy both the constitutional and local symptoms. In the former we must try to lower the pulse and abate the fever, and then relieve the fever of the feet. To effect this object, bleeding, where it may be done with safety, is the quickest way, but unfortunately it can't be done except in very few cases. When and how to take blood from an animal is treated of in my "treatment" of inflammation of the lungs, so I need not repeat it here, but refer the reader to that article. The same applies to this as well as other diseases of the horse. However, I may say in passing, that two to four quarts of blood may be taken from a patient, provided he is young, in high condition, and in the very outset of the attack. The amount must be regulated by the falling of the pulse. In all other instances it is not advisable to bleed, for then we shall do more harm than good. This stage of founder may be called the congestive stage, for exudation has not yet taken place, and our object is to prevent it by this remedy if possible.

The remedies used by the best veterinary surgeons at present, both here and in Europe, are very simple and efficacious.

In all cases where bleeding is contra-indicated (and they are the more numerous) they give from four to six drachms of aloes, not in a solid form, because it takes too long to operate, but a solution of aloes. This laxative medicine is rubbed down in hot water, so as to make a watery solution ;

some practitioners mix a little alcohol with it, and horn it down the animal's throat.

The shoes are next removed as gently as possible, and the feet enveloped in hot linseed poultices, which may be renewed every two hours; or it will do better, perhaps, to keep warm water thrown over the poultices continuously. Where slings are to be had it will relieve the creature to have the weight off his feet; if not, he should be induced to lie down—this he will do after the first restlessness is over. By these means the pain and fever are much diminished, and the pulse often falls fifteen or twenty beats per minute.

As the fever runs very high, in every case there is intense thirst. To relieve the constitutional disturbance two to four ounces of saltpetre should be mixed in a pail of water and given to the patient. I cannot too highly recommend this simple medicine in these cases, for experience has proved it to be of immense service.

This simple mode of treatment generally succeeds when the case is attended in time, when signs of improvement should be visible in a few hours. If, unfortunately, the symptoms in neglected cases should not abate, the stage of congestion has passed, when serum and lymph are poured out between the laminæ. When this state of things is apparent, many surgeons make an opening at the toe, where the sole and crust meet. This they do with a drawing knife, and make an exit for the matter to flow out; this requires to be very carefully done to avoid injury.

The poultices are now applied; must be very cooling when clay is used, or some other cooling material.

The terminations of this disease have been already treated of, but in most cases where these remedies are applied in time there need be no fear of fatal consequences.

The feed should consist of any light, nutritious sort, as boiled carrots or apples. The patient should also be removed to a loose, airy box stall, where such is to be had.

SUB-ACUTE LAMINITIS, OR FOUNDER.

This form of the disease is usually observed in old horses that have been subjected to hard work in cities. Its approach is gradual, and as there is not much pain, heat, or tenderness, this form of laminitis may be mistaken for some other disease. As the pain is not constant, so the lameness disappears at intervals. From these facts some people mistake this disease for rheumatism. I saw a case of this kind last week at the Erie Railway stables. The old stager would go very well for a few days, and then get lame with a sort of intermittent lameness.

The best remedy for this purpose is warm foot-baths. A change of food from oats to carrots or apples, to keep the bowels open, and the animal removed to the country, where he may do light work on soft ground, for his days of usefulness in a city are ended.

PUMICED FOOT.

Cause.—This structural disease is one of the terminations of acute founder, especially in such cases as have been neglected or mismanaged in the first stage of the attack. It is also brought about by putting a creature too soon to work before recovery is fairly established. It must be borne in mind that during the inflammation there is perverted nutrition, and as a consequence the horn secreted is of an inferior quality. Every man familiar with horseflesh, and having a sharp eye, may see furrowed, uneven, or wavy ridges along the hoof parallel to the coronet in many horses. This shows by its irregular appearance the effects of acute laminitis; and more marked still are those seen when it happens to be chronic laminitis. In these cases the horn is light, spongy, porous, and quite insufficient to bear the weight of an animal while at work. But not only the wall, but the sole of the foot, is injured permanently by the inflammation; instead of the sole holding its own arched or concave form, it becomes convex. Besides these, the coffin bone may be detached

from its place, descending against the sole, and in some bad cases producing hernia of that bone. This protrusion or bulging of the sole is called pumiced foot.

Treatment.—In this instance is purely mechanical. No art of man can restore the anatomical structure of the parts, but the creature may be relieved by a proper shoe, and made to do light work about a farm.

For this purpose a bar shoe, with a broad circle, thick at its outer circumference, and generally beveled away towards its inner edge; leather soles may be placed inside, and a mild blister applied to the coronet, to stimulate, if possible, a healthier growth of horn.

SEEDY TOE.

This is also another effect of acute founder. Sometimes the suppuration is confined to a small space about the toe, or blood is effused and the serum becomes absorbed; in either case the function of the papillæ of the sensitive laminæ is perverted. This lesion produces an inferior quality of horn, which has received the name of “seedy toe.”

In many cases the porous horn admits dirt and gravel, which considerably aggravates the evil. This altered texture cannot be remedied.

PRICKED FOOT.

Cause.—This injury is of every day occurrence in city practice, and of all the lamenesses to which the horse is subject this is by far the most frequent. It is simply a punctured wound of the sensitive sole—always more or less dangerous. All parts of the sensitive foot are called by horsemen, in vulgar language, the “quick,” and it is more or less serious according to both the particular spot where it enters, as well as the depth it pierces into the tissues. An animal pricked at the toe, as a general rule, will not be as much injured as one that has received a punctured wound through (or in the locality of) the frog. A prick of the toe

may pierce the periosteum of the coffin bone, or in the heel it may pierce the joint or fatty frog; these latter are always of a very grave character. It is a very strange fact that in very many instances the smaller the nail, for example, that enters the foot, the more damage ensues; while a very large one is much less injurious, and often leads to less inflammation and constitutional disturbance.

These injuries are very often caused by either the carelessness or ignorance of horse-shoers, who know nothing of the structure of the foot; or an animal while at work pricks his foot with a nail in the street (very often lath nails), a piece of thick glass, sharp flints, or, in fact, any sharp instrument.

Symptoms.—These are very apparent, as shown by the sudden lameness, and indeed in most cases the animal cannot proceed one step until the foreign substance is removed. The intense pain in this, as in other injuries of the foot, produces the lameness. The evils to apprehend in this case are: inflammation ending in suppuration, which may lead to the formation of sinuses; necrosis of part of the coffin bone; or, more fatal yet, the irritation may be so severe as to end in tetanus (lock-jaw). Simple an affair as a prick in a horse's foot seems to be, it is always attended by traumatic fever in a greater or less degree; this usually sets in a few hours after the injury, or soon after reaction has been fairly established.

Treatment.—The first thing to be done is to find out and remove the offending substance, whether it be a nail, glass, or any sharp instrument. For this purpose the part must be washed with tepid water, and the foot thoroughly examined; in the next place, a pincers must be pressed against the sole and wall of the hoof all around until some particular spot shows tenderness on pressure—this will determine the seat of the wound.

When the wound is discovered, all foreign matter, as well as the nail, must be removed, such as dirt, sand, gravel, &c.,

which may have entered the opening. It is advisable, in the majority of cases, to have the shoe gently taken off, and the surrounding parts of the wound nicely pared with a drawing knife. By this means the discolored horn, blood, or pus (corruption) that may have formed must be removed.

The great object here is by judicious treatment to limit the inflammation and prevent it from forming sinuses, or extending to the horny tissues. This may be accomplished (after removing the shoe) by resting the animal, the injection of mild astringent and caustic lotions into the wound with a small syringe, and enveloping the foot in poultices of linseed meal for a few days. In addition to these measures, an ounce or two of saltpetre dissolved in a pail of water will aid in abating the febrile symptoms, or a mild laxative, such as linseed oil or small doses of aloes. In bad cases too much importance cannot be attached to the proper injection of cooling applications into the wound two or three times a day with a small pointed syringe. The following remedies for that purpose will be these :

Take of carbolic acid	-	-	One drachm.
“ water	-	-	One ounce.

Or—

Goulard's extract	-	-	One drachm.
Sulphate of zinc	-	-	Two drachms.
Sulphate of copper	-	-	“
Vinegar	-	-	Eight ounces.

Pulverize the sulphates, dissolve in the vinegar, then add the lead.

To repeat the treatment—

Remove the foreign matter.

Take shoe off, and rest the patient.

The surrounding parts of the wound pared.

The wound syringed.

The foot poulticed.

QUITTOR, OR FIBRO-CHONDRITIS.

Cause.—This strange name, “quittor,” was given by the old farriers to a fistulous wound about the top of the hoof or coronary band, while they were entirely ignorant of the seat of the disease. Its situation is generally between the hair and hoof, at the inside quarter or heel of the horse’s foot. The seat of injury, in the majority of instances, is the plantar cushion or fatty frog, which is a fibro-cartilaginous tissue; and hence, when it is the subject of inflammation, it is more properly called fibro-chondritis. The history of these cases usually is that an animal has received a punctured wound from some sharp substance, which has penetrated the frog and forced its way through the sensitive sole into the fatty frog. When this is the history of the lesion the product of the inflammation so formed has to force its way upward and make an exit for its removal somewhere in the neighborhood of the coronet. Before the products of the inflammation have appeared at the top of the hoof there are formed fistulous tracks in all directions through the soft tissues within; these are vulgarly called the “pipes,” and the opening at the top has received the euphonious name of “quittor.”

This is not, however, the history of all cases of this kind. It may result from a very bad corn, a tread on some sharp substance that has extensively bruised the sensitive sole without puncturing it; or it may, in fact, be the result of any injury that leads to the formation of matter which, by neglect, accumulates within the hard hoof, and gradually works its way out at the coronet. These fistulous openings or pipes communicate with the ulcerated wound or quittor that is observed above the coronary band.

This hidden but extensive inflammation produces severe and protracted lameness, by the destruction of the soft tissues within; and it is well if the periosteum or coffin bone is not also involved in the disease.

Treatment.—Perhaps no one disease of the horse's foot (except spavin) has received more barbarous treatment at the hands of men than quittor. No remedy was supposed to be severe enough, and what torture and needless agony poor dumb creatures were subjected to exceeds belief. The most powerful caustics were thrust in to "core out the pipes," as the old farriers called it. Red-hot pieces of iron were forced into these openings. These fellows would have been better employed drilling holes to blast rocks than pretending to treat diseases of this kind.

The cure of this injury will be both tedious and painful in proportion to the extent of the destruction of the tissues, as it is not one of those injuries that proceed thus far in a day, but is allowed to run on neglected for weeks. No miracle can be performed in the cure thereof. In such cases as do not involve the periosteum of the coffin bone in destructive inflammation, the remedies may be more hopefully applied. The great principle in the treatment of quittor and of similar wounds is to remove as soon as possible the internal cause of irritation, and thus limit or prevent the spreading of the inflammatory action and the excessive suppuration.

To descend to particulars in the treatment we begin by removing the shoe and finding out, if possible, the origin of the mischief, if a prick or corn has been the cause. As there is matter within the foot, free vent must be given to it by making a more natural and dependant egress for it than the opening at the top of the hoof. All pressure and irritation must be removed and the parts soothed with warm poultices; mild dressings and rest are the only indications for treatment. All powerful caustics only destroy the healthy parts without healing the diseased tissues.

In addition to the poultices, we must syringe the pipes with proper remedies, so as to aid nature in discharging the product of ulceration, and stimulating the parts to healthy granulations. For this purpose local injections into the

wound with a small syringe two or three times a day must be resorted to. For bad cases of quittor the following is the best: Take of—

Bi-chloride of mercury, pulverized	-	One drachm.
Hydro-chloric acid	-	- Five drops.
Spirits of wine	-	- One ounce.

Dissolve the mercury in the acid, then add the spirits of wine.

For quittors that are not very serious, or of long standing, the following will do very well: Take of—

Carbolic acid	-	-	One drachm.
Water	-	-	One ounce.

Either of these remedies must be carefully injected with a small syringe into the openings two or three times a day. The prescription recommended for pricked foot is also an excellent mild preparation for ordinary quittors.

The ill consequences of quittors are many, but one of the evils to be apprehended is the injury of the coronary substance. When this disease has been long continued and accompanied by much sloughing, the coronary band and the vascular tissue underneath it—from which latter the horn is secreted—is often so injured that it secretes a deficient quantity of soft, weak horn, which lesion produces what is known as “false quarter.” When this state of things supervenes it renders the creature unfit for anything except slow work, for it is almost incurable. The only hope then is occasionally to mildly blister the coronet, and have a shoe adapted to the injured state of the foot.

SANDCRACK.

Cause.—This name is given to a fissure or crack in the wall of the hoof; this split or fracture of the horny fibres of the hoof extends generally from above downwards, and is chiefly the result of external violence or injury of some kind. In this respect it differs from false quarter, for there may be

no disease of the coronary substance from which the wall is secreted.

It chiefly occurs in weak, brittle, light colored feet, where the rasp is used at every shoeing, and often comes on suddenly as the result of concussion on a hard road. This accident may happen in an instant from a false step. It occurs in both fore and hind feet. Its situation in the first instance is the inner quarter; in the second, the front or near the toe, the principal stress coming on that part in the hind foot. It always constitutes unsoundness.

The depth of the crack or fissure determines the lameness. When it is merely superficial there is no lameness, but when it penetrates to the quick pain and lameness ensue. The opening sometimes extends to the eighth of an inch, bloody serum exudes, and proud flesh sprouts from the crack. A case of this kind is difficult to cure.

Even when the opening is not so deep as this sand and dirt constantly enter, and act as irritants to the sensitive structure beneath, when after some time fungous growths may appear from the sandcrack.

Treatment.—The present treatment of sandcrack is chiefly mechanical. The crack is thoroughly cleaned out, the dirt and foreign matters removed with a bit of wire covered with a little oakum, the wash consisting of diluted carbolic acid. The horn on each side of the crack is very slightly pared; this much is only a preparatory process.

To hold and retain the divided parts of the hoof together a very ingenious contrivance is used. This is a French invention, and is simply a piece of thick fine steel wire, half an inch long, with a claw on each end. In order to make a proper opening in each side of the divided wall, for the entrance of these claws, there is an iron adapted for the purpose; this is heated red-hot, and the two holes are burned into the wall at the same time. When this is done the claws of this little contrivance are gently tapped into their places. These are sold by most surgical instrument makers.

Some practitioners, after paring the parts, simply fire the wall by drawing a hot iron across the upper part of the crack, so as to cut off the healthy parts above from the unhealthy below. The iron should go rather deeper than for ordinary firing, or nearly through the insensible sole. After this three or four yards of waxed cord, or iron wire, is bound lightly around the hoof, so as to hold the cracked surfaces together, and then blistering the coronet twice a month. A shoe so modeled as not to press upon the crust under the crack will be found of great benefit in helping forward the repair of this injury. The crack, if properly treated, will in time recede from the coronet, and at length totally disappear.

INTERFERING, OVERREACH, TREAD, CALKING, &c.

These names are usually applied to contused wounds of the foot and leg, with loss of skin in many cases; when this occurs they are more properly called abraded injuries, or wounds of the parts so affected.

The foot and leg of the horse are liable to these various external injuries, most of which are inflicted by one limb wounding the other.

Interfering is said to take place when one foot strikes and wounds the opposite fetlock; they usually occur in young and timid horses, with ill-formed legs. To remove the cause of this injury a particular form of shoe is required to be made by some horse-shoer who knows something of the science of his business. The wound must be mildly dressed, and a boot made to protect the part until it is healed.

Speedy cut is an interference, only higher upon the legs, and generally happens with fast-going horses when put beyond their speed. In this case also a proper boot is required to protect the part from further abrasion.

Overreach is a wound or bruise produced on the heel of the fore foot by the hind one while travelling at a fast rate, and

is generally more or less troublesome. In these cases a semi-circular wound is made, the skin is raised up in a flap, which folds backwards and downwards. This injury is done, not by the toe, but by the edge of the inner rim of the shoe. Sometimes a piece of the skin is quite scooped out, in which case longer time is required to repair the wound.

TREAD, OR CALKING.

This is usually the most serious of all these external injuries; it may be caused either by one horse treading on another suddenly, as at fairs or markets, or by a false step of an animal when fatigued and exhausted from severe work.

These injuries, simple as they appear, should not be disregarded; if they are, the irritation resulting from them may cause induration and enlargement around the wounds, which are very unsightly, if not positively injurious. They sometimes also produce a wound resembling quittor. In bad cases of calking we have seen fatal results follow; the coronary substance becomes so bruised that excessive sup-puration follows; a mountain of granulations soon overhangs the hoof which almost defies remedial treatment. When this injury is allowed to run on neglected thus far, the animal might as well be destroyed, for treatment (in a monetary point of view) is useless.

Treatment.—For slight and recent wounds, as the result of interference, and for speedy cut, very simple treatment is required. A bandage must be put on for the night, dipped in the following lotion:

Goulard's extract	-	-	One ounce.
Water	-	-	Ten ounces.

Or,—

Carbolic acid	-	-	One ounce.
Water	-	-	Eight ounces.

As preventive treatment a properly fitted boot must be made and put on the foot while the animal is at work or exercising.

In bad or neglected cases of calking it may be necessary to pare away the horn around the top of the hoof, in order to remove the pressure, for in these instances the hoof acts as a foreign substance, increasing the inflammatory action of the parts affected.

In order to save the foot, the horn (according to the severity of injury) must be cut away almost to the quick around the hoof, and cooling applications continually applied to stop, or at least limit, the inflammation. For this purpose Goulard's extract (as above) is the best. The part must then be properly bandaged, and the foot put into a poultice of linseed meal twice a day. I need hardly say that in all cases of the kind the shoe must be removed.

SCRATCHES, CRACKED HEELS, MUD FEVER, ERYTHEMA, &c.

This disease of the skin and surrounding tissues of the horse's foot has given much trouble to horse proprietors within the last three months in our large cities; it has been called by the various names here stated, according to the fancies of horsemen. It is caused by long exposure to extreme cold and wet, and in cities it has been intensified by the salting of the streets in snowy weather. These influences interfere with the proper circulation of the blood in the extremities, and lead to congestion and inflammation.

In this case the oily secretion which in health keeps the skin about the heels soft and pliant is perverted or stopped. When an animal is neglected in this stage of the disease it may, and in many cases does, end in abnormal growths of various kinds on the heels; some of these growths are cartilaginous, while in other instances horny concretions form about the heels, sadly interfering with the motion of the joint, and constituting lameness.

Preventive treatment.—This may be accomplished in at least three ways, although some persons may consider them too much trouble, namely, by—

Washing the feet with cold water and putting on a bandage.

Washing the feet first with hot and then with cold water.

Using no water, but simply brushing the dirt off the heels with a hard brush.

For heels already cracked, but on which no deposit has formed, by which they become indurated and enlarged, the following remedy on that condition of the parts will be found useful. Take of:

Solution of diacetate of lead - One ounce.

Glycerine - - - Eight ounces.

This has been found an excellent application for Mud Fever or Erythema. In such animals as have horny concretions on the heels, they may be continuously pared down with a drawing knife, and then burned with a little caustic. This must not be pursued too far, as their entire removal might be attended with worse consequences.

GREASE.

Cause.—This unsightly and diseased condition of the horses' heels differ in many respects from the Scratches or Mud Fever. In the first place this disease has both a constitutional as well as a local origin, and in the second instance it rarely, if ever, is found on thoroughbred horses that are well groomed and fed. The class of animals most subject to this condition are coarse bred, heavy-limbed truck horses. Those animals, when well fed and attended to, if allowed to stand idle for hours together in wet and filth, very frequently get greasy about the heels. The hind feet are chiefly the ones attacked, as it is more common in the hind than in the fore feet.

Symptoms.—In the normal or healthy state of an animal there is secreted about the heels a sufficient quantity of fluid from the oil glands to lubricate these parts; but when this disease occurs it is the result of an increased and morbid secretion from these glands and neighboring parts of a peculiar greasy offensive discharge of matter, which is attended with irritation and increased vascular action.

In this state of the parts there is first an arrest of the secretion, then an increase, and lastly a perversion of this lubricating fluid.

The first appearance of grease is, therefore (from the arrest of secretion), a dry scruffy state of the heels, with heat and itchiness. Swelling succeeds, with slight lameness from the tension of the skin. As the discharge augments in quantity, the hair follicles become inflamed, and as a result of that inflammation deep fissures begin to form, and become prominent about the upper portion of the fetlock. In these fissures pustules begin to form; these soon burst, and expose great coarse granulations, which are vulgarly called grapes (and by others, proud flesh). When a creature is neglected in this condition, the skin of the heels becomes tough, almost horny (indurated), and in a short time the limbs become twice their natural size, and seldom if ever can be brought back to their former symmetry.

Treatment of Grease.—An animal in this condition must have an entire change of food to begin with, from oats or mixed feed to green food, carrots, apples and mashes three or four times a week. If the horse is strong and full of flesh, in addition to this an ounce of saltpetre may be given twice a week, mixed up with his pail of water, and once a week a dose of aloes, say four to six drachms. Thus much for the constitutional treatment. The local remedies are very simple. Wash the parts thoroughly with tepid water after work, clean them with a soft brush, sprinkle them over with a little dry oxide of zinc, and allow plenty

of bedding. Before going to work, smear the heels with the following application :

Laudanum	-	-	-	One ounce.
Acetate of lead	-	-	-	One ounce.
Soft soap	-	-	-	Eight ounces.

As soon as the animal is done work this must be washed off, and the dry dressing of the zinc sprinkled as before on the heels. A bandage with pressure will in a great measure expedite the cure. In such cases as are much inflamed around the heels, and grapes are present, a poultice will be required to soften and relax the parts, and remove the tenderness. For this purpose a poultice of linseed meal, sprinkled over with a drachm of carbolic acid, mixed with an ounce of water, will remove the bad smell, as well as the tenderness of the parts.

When this poultice is removed, the parts must be dusted over as before recommended with dry oxide of zinc.

The grapes are sometimes removed with a scissors, or by strangulating them with a piece of stout waxed thread, and dressing the surfaces as already recommended.

CORNS.

These are bruises of the sensitive sole in the angle between the posterior part of the quarter and the bars, and mostly occurring on the inside of the fore foot. The hind feet own their immunity to the peculiar strength of the heels and their sustaining less weight. Two sorts of feet are especially subject to corns; those with deep slanting heels, which become doubled up between the shoe and the sole, and those that have wide flat soles and low weak heels, on which the pressure causing the bruise comes from above. From continuance of pressure the interior villous sensitive surface is bruised and inflamed, serum and blood are poured out, the horn by and by becomes soft and discolored, and the parts

weakened from the continual application of the exciting cause continue to secrete unhealthy horn even after the cause of the injury has been removed. Lameness is most obvious in trotting upon a hard road ; the lame leg is brought as much under the body as possible, thus throwing the weight upon the outside heel. The shoe also is mostly worn on the outer side ; the animal generally stands with the limb bent and the heel raised, somewhat in the same way as in grogginess. Corns, although constituting unsoundness, do not in well formed feet materially reduce an animal's value, for by careful shoeing they may be got rid of gradually.

Treatment.—Pare out carefully the seat of the corn, removing all reddened and diseased horn ; reduce the crust of the quarter slightly where it is unduly strong, but leave the bars and frog untouched. These must be religiously preserved, especially in weak feet, to afford a wide bearing for the bar shoe that should afterwards be used. The following dressing may be applied. Take of

Tar	-	-	-	One-quarter pound.
Bees' wax	-	-	-	" "
Honey	-	-	-	" "
Glycerine	-	-	-	Three ounces.
Lard	-	-	-	One and a half pound.
Nitric acid	-	-	-	Two drachms.

Melt the lard and bees' wax together, stir in the lard and the other ingredients, and stir until cold.

THRUSH OR FRUSH.

This foul and diseased condition of the foot primarily consists in inflammation and ulceration of the villous and sensitive surfaces within the clefts of the frog ; it appears to arise from the continual application of various kinds of dirt and muck, which irritate the tissues both externally and internally. Animals standing continually in foul, damp

stables, or in straw yards, are liable to have this disease. Among its first symptoms is a discharge of a fetid mucopurulent fluid from the cleft of the frog, which gradually extends to the neighboring parts, and if neglected may involve the whole foot. This condition produces lameness, and, of course, constitutes unsoundness.

Treatment.—Carefully remove the diseased horn and thoroughly clean out the excavation with a drachm of carbolic acid, to which must be added one ounce of water. After this the following remedy may be used:

Calomel - - - Four drachms.

Glycerine - - - Two ounces.

This mixture must be put on a pledget of oakum and inserted into the cleft of the frog. Outside this a bandage with some wood tar will do good service, and keep the feet scrupulously clean.

CANKER

Is usually a more extensive or aggravated form of Thrush; it consists in a degenerate or depraved condition of that portion of the sensitive foot which secretes the horny frog and sole, which, instead of forming healthy horn, produces a fungous growth of soft, spongy substance, covered with fetid acrid bloody serum. This perverted secretion soon pervades the whole sole, and ultimately extends to the entire secreting surface of the foot.

The same cause that produces Thrush induces this disease, and therefore the same remedies will do equally well. The treatment recommended for Thrush, of calomel and glycerine, is almost the best known.

CONTRACTION OF THE FOOT. GROGGINESS. NAVICULAR DISEASE.

This disease is first excited by a strain of the perforans tendon at the point where it passes over the navicular bone.

It is most common in horses of the lighter breeds, with narrow chests, upright pasterns, and out-turned toes. The signs of the presence of this disease are a short tripping gait, wiring in of the heels, wearing away of the toe of the shoe, wasting of the muscles of the shoulder, projecting of the limb whilst standing. These signs infallibly mark the disease. In slight cases, and when early noticed, it is possible, if not to cure, at any rate greatly to relieve it; but where it continues for some weeks, the articular surface of the tendon becomes abraded, and the synovial membrane inflamed; after this the articular cartilage becomes involved, and lastly the bone becomes ulcerated.

Treatment.—Various but unsatisfactory remedies have been tried for this disease, but absolute rest does more good than anything else. Division of the nerve going to the foot has been tried, but little good has followed, for it is a painful, risky, unsatisfactory operation.

SPAVINS, SPLINTS, AND RING-BONES (technically called EXOSTOSIS).

These diseased conditions of the bones become very serious in animals that are specially formed for speed and labor. They are produced by the same causes, are of the same nature, and the only reason why they receive these different names is to indicate the particular locality of the fore or hind limb on which they are formed.

In all cases, the evil commences in the tough vascular membrane investing the bone, which is termed the Periosteum. From whatever cause the inflammation is induced, it is usually followed by a deposit of limy or osseous matter, which forms into a kind of bony tumor of various shapes. These may occur either in the neighborhood of the hock, knee, or pastern joints, and which from these different locations are called Spavins, Splints, or Ring-bones.

When an animal is put to inordinate and severe exertion when too young, or especially receives concussions of the joints from leaping or other causes, there is an oversupply of blood driven into these parts; they become hot and tender. The inflammation set up is followed by the effusion of lymph, which gradually degenerates into this spurious bony deposit, or *Exostosis*. In very many cases (as seen on dissection), the inflammation extends to the articular cartilage within the joint, which has resulted in the ulceration of that membrane. Diseases of this kind come on rather slowly and insidiously, and the injury may have progressed considerably before any perceptible alteration of the structure of the parts can be discerned.

INJURIES AND WOUNDS IN GENERAL.

The injuries to which the equine race are liable are many in our large cities; the majority of cases are the result of accidents, while others are brutally inflicted by dastardly ruffians for various reasons. The most common and important wounds are the punctured, contused, lacerated, and incised.

A wound consists in a solution of continuity, whether from violence or any other cause.

The punctured wound is the most frequent in horse practice, and the foot is generally the seat of the lesion. Contused and abraded wounds are oftener seen in the neighborhood of the coronet, from a severe tread by the opposite shoe (calking). Lacerated wounds are not unfrequent from violence inflicted by shafts or wheels of carriages coming in collision with some part of the animal's body. Incised wounds are mostly the intentional doings of revengeful men with a sharp instrument, to occasion loss to the owners of valuable animals. The other injuries to which the horse is liable are Fractures, Dislocations, Sprains, and Burns.

The indications for treatment presented in wounds of whatever nature, may be briefly stated thus :

- To relieve shock ;
- “ arrest hemorrhage ;
- “ remove foreign matter ;
- “ approximate and retain the parts ;
- “ limit the resulting inflammation.

Amongst the most important of these indications are, 1st, To arrest the current of blood, which may be either arterial, or venous, or both, slight or profuse, external or internal. The scarlet color and saltatory jet will inform us when it is arterial, the purple hue and steady flow when it is venous. Internal hemorrhage is more dangerous than external, because it is generally inaccessible. 2d, To remove foreign matter ; this must be done at once and effectually with a sponge and water ; not a particle of matter, not a hair, or the smallest clot of blood must be left behind, or it will be sure to provoke and keep up the irritation. 3d, To limit the inflammation ; this is done by the usual antiphlogistic treatment.

The Ill consequences of Wounds and Injuries.—The bad consequences to be apprehended after these injuries are

- Traumatic fever ;
- Hemorrhage ;
- Excessive suppuration ;
- Gangrene and Tetanus.

Traumatic Fever usually sets in within the first few hours after the injury, or soon after reaction has been fairly established.

Secondary Hemorrhage must be steadily kept in view, and the proper means used to prevent its injurious effect.

Profuse Suppuration may be looked for in nearly all bad wounds, whatever their character, and its exhausting effects counteracted by supporting remedies.

Gangrene is not so common a sequel of wounds as in human surgery, but when it does appear it must be promptly dealt with.

Traumatic Tetanus often results from punctured wounds, especially of the foot, on horses of a nervous and irritable temperament. Sudden changes of temperature has much to do with the development of this disease.

STRAINS OR SPRAINS IN GENERAL.

The term sprain is applied to so many sorts as well as degrees of injuries that it conveys no idea either of the simplicity or the gravity of the lesion in any given case. A sprain or strain is usually the result of awkwardness or violence inflicted upon the muscles, tendons and ligaments. The severe and continued exertion required of some horses, and that often before these structures have attained their full strength and solidity, render them very liable to injuries of this kind.

Some sprains may be so slight (from a false step or such like), as to rupture only a few of the minute fibres, which, arranged in bundles (fasciculi), make up the tendons and muscles, and which by a little rest and attention, passes off as only a temporary inconvenience. Other sprains (so called), may be so severe and extensive as to cause rupture and displacement of the cellular membrane, tendons and ligaments, and all other parts forming the articulation. Sometimes a whole large tendon is involved, with extravasation of blood, which seriously complicates the injury. Thus it may seem that a sprain may be no simple affair, for there are innumerable shades of difference between sprains and sprains, and that a bad sprain may be worse than a fracture. These injuries, beside the effusion into the tissues, are also accompanied by excessive pain, throbbing of the arteries in the locality of the lesion, and severe constitutional symp-

toms. To repair the injury inflammation sets in, with its accompaniments of heat, pain and swelling, lymph is poured out; this occasions enlargement, and not only so, but by separating the fibres from each other, shortens the affected structures, as will be seen in bad cases of the back tendons.

Treatment.—This is very simple, and for that reason is seldom followed by ignorant persons; they will persist in using oils and liniments, and sometimes blisters. The application of hot water, continued for several hours, and in bad cases for a whole day, is the best remedy to begin with. Perfect rest, and if possible having the animal slung, will both very much expedite the cure. Beside the hot water the following prescription will do good service:

Laudanum - - One ounce (or two).

Goulard's extract, one ounce, in a quart of
water.

Soft soap - - - One pound.

The object of this treatment both by the fomentations and medicines is to bring down the heat and tenderness, and if possible limit the inflammation, and its injurious terminations.

Anodynes and warm dressing are the best for this purpose. Some practitioners cover the parts with a thick woolen cloth, and keep it continually saturated with both remedies.

In addition to these a laxative diet of mash and roots, with an odd dose of physic, will be very beneficial.

Old sprains of long standing may be treated with friction, counter irritation and light work.

Sprains have occurred in at least a dozen parts of the horse's body, but the parts most subject to these injuries are:

Strain of the flexor brachii.

“ “ shoulder joint.

“ “ back tendons.

“ “ suspensory ligament.

SPRAIN OF THE FLEXOR.

The muscle which raises and advances the limb is the most common of shoulder lameness. It results in truck horses, from unequal weight thrown upon one shoulder. In road horses, in trying to extricate the limb in heavy ground, &c., and also from short or sudden turns by awkward drivers.

Treatment.—In bad cases sling the animal: in all cases tie the animal up by the head so as to prevent the lying down and rising up, which first relaxes and then stretches the injured parts. Fold a horse-cloth several times round the breast, secured there with strap or girths, and pour hot water continually on the parts, and also apply the remedy already mentioned.

SHOULDER SLIP.

The muscles investing the shoulder blade occasionally become strained, an accident quite common in hilly countries, and also from double ploughing and awkward stepping: and lastly, the same thing happens to young carriage horses that work too freely. The muscles usually affected are the antea and postea spinati, teres, and subscapularis. Tenderness, slight swelling and lameness are perceptible, and after some time there may be atrophy of the muscles.

The same remedies may be used to advantage.

SHOULDER JOINT LAMENESS.

Cause.—The most serious form of shoulder joint lameness consists in a softening of the articular cartilage of that joint. In this case there is inflammation of the synovial membrane, and excessive secretion of unhealthy synovia, which produces bulging of the capsular ligament, which may be detected by pressure.

Symptoms.—When this is the character of the lameness, it may be easily known by the manner in which the animal progresses. He usually drags his toe, and throws the leg outward at every step.

Treatment.—In this instance is very unsatisfactory, blisters, setons and firing have been tried in hundreds of cases, without any permanent advantage, for the simple reason that the cartilage is apt to be destroyed, and the underlying bone ulcerated.

STRAINING OF THE BACK TENDONS

Is one of the most common accidents affecting the horse, and involves the perforans tendon and its check ligament. In the large proportion of cases, the ligament is first affected immediately above its insertion into the tendon.

Symptoms.—Pain, heat and lameness ensue, and if the animal continue at work, other tendons and ligaments become involved, and permanent thickening and shortening of the limb ensue.

Treatment.—Envelope the limb in a piece of horse-rug, folded several times (or in any other woollen bandage capable of retaining a quantity of water), and saturate it every hour with fresh supplies of hot water. Continue this until all heat and tenderness are removed, and the creature appears to bear upon the limb, then substitute cold for hot water, remove the bandage, and hand-rub the parts several times daily. In addition to this, a laxative diet—no oats, with small doses of medicine.

STRAIN OF THE SUSPENSORY LIGAMENTS.

Cause.—This injury is mostly confined to fast horses, such as trotters, racers and hunters. This class of animals when put to rapid and severe exercise when too young, may suddenly either sprain, rupture or tear the suspensory ligament. When this latter happens it is called *breaking down*.

This is a strong ligamentous band, fixed into the back part of the knee, passing down behind the cannon bone, and in front of the tendons, and attached to the pasterns and foot below. While the animal is standing it supports the fetlock. While in action it contributes to that springiness of gait so noticeable in well-bred horses.

Symptoms.—The lameness comes on gradually, and is not so acute as in the case of sprain of the neighboring tendons, but simple as it may seem, unless promptly treated, it is apt to leave the parts weak, and liable to a second attack. Rupture or tearing of the ligaments occasionally happens while an animal is leaping, or galloping at an inordinate rate; it may either be partial or complete. This accident is commonly named “breaking down.” When this happens the fetlock comes nearly to the ground, its flexor tendons are also much strained, which considerably augments such a severe injury.

This accident generally occurs when an animal is at full speed, and is confined chiefly to one leg, and rarely happens in both legs at once. The horse stops instantly, or falls; on rising, he is seen to rest on his fetlocks, the toe turned up, and the sole looking forward. It can be easily understood that there accompanies this severe accident intense pain, swelling and a high fever, the arteries pulsate with great violence, while the creature is bathed is profuse perspiration.

Treatment.—In the case of a slight sprain of the tendons, as well as the suspensory ligament, the remedies are very simple—it consists in rest, cold application continued for several days—and when all inflammation has subsided the application of mild blisters. Three months rest is essential in most cases to ensure a perfect cure. When the ligament and neighboring parts are torn it is a most serious business. In this instance the creature must be slung. The treatment as in the former case is much the same—cold application, persistently followed for at least ten days;

besides this, mashes, with an ounce or two of saltpetre in the drink twice a day, until the fever subsides.

In my own practice I adopt the following method instead of the cold water. I substitute the following, after nicely bandaging the parts—continuously keep it wetted with this lotion :

English crown soap	-	-	Two pounds.
Laudanum	-	-	Four ounces.
Goulard's extract	-	-	Four ounces

Put the last-mentioned in a gallon of water, then add the other ingredients.

After several weeks, and when all irritation and heat are removed, and the animal can rest on the limb, I release him from the slings, put on a high heeled shoe, blister the parts mildly, and allow several months rest to ensure recovery.

BROKEN KNEES.

Under this term is included the slightest division of the skin as well as the most extensive injury of the joint.

The knee of the horse is more liable, for many reasons, to serious injury than any other joint, but beside this, others also are injured occasionally : the stifle, the hock, elbow and fetlocks, but most frequently the knee. The slightest lesion of this kind consists in a mere superficial bruise of the scarf skin (or Epidermis), while the deep-seated structures remain uninjured. In other instances, the true skin (or the Dermis) is so much bruised that the hair follicles are destroyed, in which case no hair will grow on the part so injured, but a bald white scar remains as a permanent blemish.

Bad falls so severely lacerate this joint as to tear open the sheath of the large tendon that passes in front of this joint, or still worse, penetrate and expose the ligament of the true joint itself.

Treatment.—When the scarf skin only is bruised, the horse must be kept at rest, the part tightly bound with a broad linen bandage, which should be kept constantly saturated with cold water. This simple treatment is the best, and must be continued until all soreness and swelling are gone. When the hair roots are uninjured no blemish remains, and until the hair grows the baldness may be concealed by the use of lamp-black and oil; the rapid growth of smooth hair is encouraged by rubbing the part with castor oil, and if it should appear tardily, with an occasional dressing of diluted tincture of Cantharides. If, however, the hair roots should be destroyed, a cicatrix remains in spite of all the vaunted oils and other specifics.

When joint oil (synovia) flows from the wound, it is generally a very serious injury, and at once demonstrates the nature of the accident, this fluid may either proceed from the sheath of the large tendon or from the true joint itself; in any case it is a lesion requiring the skill and patience of the best surgeons.

The management of open joints consists in local and constitutional treatment; the first thing to be done (when it is ascertained that the joint is exposed) is, sling the animal if possible, carefully remove with water and a sponge all gravel or dirt that may have got into the opening, for it is useless to expect the parts to heal until all foreign matter is removed. Avoid all probing of the orifice, for it will only irritate and endanger the limb. Never try to rudely plug up the opening with lime, alum, flour, or any mechanical invention.

Removing weight and pressure from the injured parts by slinging and keeping the part in a fixed position prevents the restless jerking of the limb, the outpouring of the synovia, as well as the demand for more. After removing the dirt, etc., a simple poultice of linseed meal may be applied for two or three days; this must be kept moistened with the following:

Goulard's extract,	-	-	Two ounces.
Laudanum,	-	-	Two ounces.
Water,	-	-	Two quarts.

After carefully removing the poultice, a good linen bandage must next be put on; this may be moistened occasionally with the wash, and not removed for two or three days at a time.

Poulticing encourages the growth of healthy granulations, which speedily closes up the wound. If, however, these granulations should become exuberant, or proud flesh appear to pass out beyond the surface, a good broad tight bandage will repress their growth; if not, touch them lightly with some caustic, or with the careful use of a hot *smooth iron*.

In no state of the part is the use of hot oils, ointments, or blistering justifiable. *So much for the Local Treatment.*

Constitutional Treatment.—Wounds of this kind are always accompanied by traumatic fever, which is one of the ill consequences to be guarded against. Horses die (in these cases) not exactly from the injury itself, but from the fever. This is heightened by the nervous and irritable constitution of horses, more than cattle or other animals. In this condition the fever increases thirst, and to relieve the fever two ounces of saltpetre may be given in a pail of water.

BONE-SPAVIN

Is a bony enlargement on the antero-internal part of the hock, usually between the shank-bone and the cuneiform medium, and occasionally between the two cuneiform bones. Severe work, especially in young growing animals, with badly-formed upright hocks, occasions inflammation of the periosteum, extending soon to the bone itself, and causing the deposition of osseous matter.

Treatment.—In recent cases, apply cold, as directed for splint; but in protracted cases, when the joint is extensively affected, hot fomentations afford more relief, by promoting exudation. Where these do not succeed, blisters or firing, or the insertion of a seton, is advisable. The farriers' oils, and other remedies in vogue for this and similar lamenesses, act merely like blisters, and not, as is popularly believed, by extracting the bony deposit. Pain and lameness cease when the deposit is consolidated, and the limb becomes tolerably serviceable, although usually stiffened from the want of free movement between the small bones of the hock.

SPLINT

Is a bony enlargement, technically called an exostosis, situated usually below the knee, and between the large and small splint bones, generally on the inside of the limb, and most common in horses employed at fast work, and that have been much on the road whilst young. Occasionally they appear in young growing horses, almost without being observed, and seldom cause much lameness unless when rapidly deposited. When occurring on both sides of the limb, and especially when accompanied by bony enlargements about the pasterns, they indicate weakness, a tendency to bony growths, and a consequent liability to lameness. When immediately underneath the knee, the splint is most apt to interfere with the movements of the joint, and cause lameness. In all cases the evil commences in the periosteum—the tough vascular membrane investing the bone. Inordinate exertion, especially concussion, in badly shaped limbs, drives to it an over supply of blood, the parts become hot and tender, and lymph is exuded from the inflamed vessels, and gradually converted into bone. The animal indicates these changes by his dropping gait, especially noticeable at the trot, and upon a hard road.

Treatment.—Whilst heat and tenderness continue, the parts must be kept constantly wetted with cold water. Saturate a piece of spongiopiline with cold water; secure it on the limb with a light bandage, and squeeze out and freshly wet it every hour; or, if practicable, let the horse stand for an hour several times a day up to the knees in a pool or stream of water. Allow perfect rest for ten days or a fortnight. When by such means the heat and tenderness are removed, apply a cantharidine blister, some of the ointment of the biniodide of mercury, or the hot iron. Such remedies condense and harden the bony deposit, but do not, as is generally thought, remove it. Perfect union shortly takes place between the large and small splint bones, the swelling becomes solid, the lameness disappears, and the splint, although still remaining, and strictly speaking constituting unsoundness, occasions in well formed limbs no inconvenience.

RINGBONES

Consist in a circle of bony matter laid down round the coronet—a natural effort to strengthen the parts, and enable them better to withstand too early work, or too great concussion. They are most common in the fore limbs of draught horses, with short upright pasterns and small feet, or in the hind limbs of lighter-bred horses. Although they do not invariably cause lameness, they indicate disease, are, moreover, apt to extend, and therefore constitute unsoundness.

THOROUGHPIN OF THE KNEE

Consists in an enlargement of the synovial cavity, through which the flexor tendons pass towards their lower insertions. It is most obvious on the inside of the limb, immediately above and behind the joint, but can be readily pressed outwards. It results from strain of a small ligament which attaches the tendon to the arm-bone, and when it first occurs causes swelling and lameness. The treatment consists in rest and fomentations, followed by blisters when the heat and tenderness are removed.

SIDE-BONES

Are hard swellings, situated immediately above the quarters and heels, and resulting from the conversion into bone of the elastic lateral cartilages. They occur either on one or both sides, or in one or both limbs, and are most common in heavy draught horses with upright pasterns. Unless when of rapid growth, they seldom cause lameness.

Treatment.—Ringbones and Side-bones require the same treatment as splints and other bony enlargement, namely, cold applications, kept up steadily until heat and tenderness are removed, and succeeded by blisters or firing.

WINDGALLS

Are soft puffy swellings, varying from the size of a marble to that of a walnut, found in the neighborhood of the fetlocks, depending upon the accumulation in the tendinous sheaths of an undue amount of synovia, or joint-oil, secreted to obviate the friction of severe fast work, and most frequent and serious in animals with long, oblique pasterns. Although at first soft, and easily reduced by wet bandages and a few days' rest, they by-and-by, from the continued irritation and friction of work, become harder, lymph is mixed with the synovia, and several weeks' rest, with blisters, biniodide of mercury, or mercurial charges, are required for their reduction. Indeed, in middle-aged horses, which have been at full fast work, windgalls, when once they have appeared, can seldom be permanently removed, but are apt to return whenever the animal again goes to fast work on the road.

THOROUGHPIN

Is distension (or windgall) of the bursa of the flexor pedis tendon, and is situated immediately above the prominence of the hock, between the bone and the gastrocnemei tendons. It results from severe fast work, especially in young horses,

with that faulty conformation known as sickle-hams; is at first soft, and easily reduced by rest and cold applications; but becomes, when of long standing, hard, owing to the exudation of lymph on the interior of the bursæ. Distension of the capsular ligament of the hock-joint, or bog-spavin, is occasionally mistaken for it, but is situated lower down, and cannot so readily be pressed from one side of the limb to the other. Bog-spavins and thoroughpins, however, often co-exist, for the irritation and pressure of serious bog-spavin are apt to induce distension of the contiguous bursæ of the tendons. Treat as for windgalls, with cold applications and pressure, followed up by blisters.

CURB

Consists of strain of the posterior straight ligament of the hock; causes tenderness and swelling on the inner and back part of the joint; occurs, especially in horses, with the os calcis short, and inclining forwards: and requires, like other strains, rest, cold applications, friction, and after a time blistering and firing.

CAPPED HOCKS

Usually proceed from kicking; are generally indicative of vice; consist in infiltration of serum into the subcutaneous cellular tissue about the point of the hock; lead to thickening of the integuments, but seldom cause lameness. Their appropriate remedies are pressure, with wet bandages, blisters, or a little of the ointment of the biniodide of mercury, or, in bad cases, puncturing.

BOG-SPAVIN

Consists in distension of the hock-joint, with an excessive secretion of dark-colored thickened synovia, mixed with lymph. The delicate synovial fringes which secrete the

joint oil become red and vascular, and unduly active, and the fluid thus poured into the capsular ligament of the joint sometimes presses upon a vein (the saphena major), which becomes enlarged, and thus gives rise to the old title of Blood-spavin, still occasionally applied to the disease. It occurs in weakly, rapidly growing animals, sometimes without any apparent cause, but more commonly in those that have been put too early to work beyond their strength.

Treatment.—Suspension of work, gentle exercise, bandages kept cool and wet, occasional friction, with a laxative diet and a little nitre, should first be tried, and if unsuccessful, superseded by blisters, or in extreme cases, by firing. In old hard-worked animals, especially cart horses and hunters, bog spavin is more intractable, the supply of synovia is insufficient, and, from want of the natural lubricant, the fringes become irritated and inflamed. Similar treatment must be pursued, but firing and several months' rest are most serviceable.

GLOSSARY.

A

- ABNORMAL. Unnatural, irregular, unhealthy.
- ABRASION. Removal of a portion of skin, by violence or ulceration.
- ACCLIMATIZE. To inure to a new climate.
- ACINESIA. Loss of muscular power.
- ACNE. A pustular disease of the skin, involving the sebaceous follicles.
- ACUTE. Active, recent, of brief duration.
- ADENOID. Glandular, or gland-like.
- ADIPOSE. Fatty.
- ADYNAMIC. Prostrate; without power.
- AFFLUX. Flow toward a part.
- ALBUMINURIA. The presence of albumen in the urine.
- ALGID. Cold.
- AMAUROSIS. Partial or total blindness from an affection of the retina, optic nerve, or brain; *i.e.* *nervous* blindness.
- AMBLYOPIA. Dim, or obscure vision.
- AMENORRHŒA. Absence or arrest of menstruation.
- AMORPHOUS. Shapeless; without definite form.
- AMPHORIC. Pitcher-like, or decanter-like. Applied to sounds heard by auscultation or on percussion.
- AMYLOID. Resembling starch.
- ANÆMIA. Deficiency of red blood.
- ANÆSTHESIA. Absence or loss of sensation and perception.
- ANALEPTIC. Invigorating, restorative.

- ANASARCA. General dropsy of the areolar tissue.
- ANEURISM. Morbid dilatation of an artery, with or without rupture of its coats.
- ANFRACTUOUS. Having an irregular, grooved, or broken surface; applied to a cavity in the lung.
- ANGINA. A choking or suffocating disease.
- ANODYNE. Tending to relieve pain.
- ANOREXIA. Loss of appetite.
- ANTHELMINTIC. Destructive of, or tending to cause the removal of, worms.
- ANTI-ARTHRITIC. Curative of gout.
- ANTI-LITHIC. Solvent of stone or gravel.
- ANTI-PHLOGISTIC. Tending to arrest or mitigate inflammation.
- ANTI-PSORIC. Curative of itch.
- ANTI-TOXIC. Antidotal to poison.
- APEX. The uppermost point.
- APHONIA. Loss of voice.
- APHTHÆ. Small whitish ulcers, originating in vesicles; frequently found in the mouth.
- APLASTIC. Inorganizable.
- APNŒA. Arrest of respiration.
- APPLICATA. Things applied to, or brought into contact with, the exterior of the body.
- APYREXIA. Intermision.
- ARACHNITIS. Inflammation of the arachnoid membrane.
- ARTHRITIS. Gout.
- ASCARIDES. Round worms.
- ASCITES. Peritoneal dropsy.
- ASPHYXIA. Suspension of breathing, or of the aeration or circulation of the blood.
- ASTHENIA. Debility.
- ASTHENIC. Without strength; feeble; attended by prostration.
- ATAXIC. Irregular; out of order.
- ATELECTASIS PULMONUM. Imperfect expansion of the lungs.

ATHEROMA. A pulp-like or pap-like formation or degeneration.

ATONY. Loss of tone.

ATROPHY. Absence or defect of nutrition.

B

BALANCIVE. Promotive or restorative of balance, proportion, harmony.

BIOLOGY. The science of life, and of the functions of living beings.

BLASTEMA. Material out of which tissue is or may be organized.

BLEB. See Bulla.

BORBORYGMUS. Intestinal gurgling.

BRIGHT'S DISEASE. Fatty or other degeneration of the kidney.

BRONCHOPHONY. Resonance of the voice, in the lung, like that normally heard in the *bronchial* region.

BRONCHORRHEA. Excessive discharge of mucus from the bronchial tubes.

BULIMIA, BOULIMIA. Excessive appetite.

BULLA. A blister; *i.e.* an elevation of the cuticle, containing serum.

C

CACHEXIA. A depraved or diseased habit of system.

CADAVERIC. Belonging to the dead body.

CALCAREOUS. Containing or resembling chalk or lime.

CALCULUS. Stone.

CALVARIA. The cranium.

CARCINOMA. Cancer.

CARDIALGIA. Heart-burn.

CATALEPSY. A nervous affection, characterized by paroxysmal rigidity of the muscles.

CATARRH. An affection of a mucous membrane, characterized by increased secretion.

- CAVERNOUS. Connected with or indicative of a cavity.
- CEREBRITIS. Inflammation of the brain.
- CHALYBEATE. Containing iron.
- CHLOASMA. Liver-spot; a yellow discoloration of the skin.
- CHOLAGOGUE. Tending to increase the flow of bile.
- CHONDROMA. A cartilaginous tumor.
- CHOREA. St. Vitus' dance.
- CHRONIC. Protracted; continuing, without much change, for a considerable period.
- CINCHONISM. The production of characteristic effects of Peruvian bark, or of its alkaloids, upon the system.
- CIRCUMFUSA. Things surrounding the body: *e.g.* air, light, moisture, etc.
- CIRRHOSIS. Waxy degeneration of the liver.
- CLAVUS. A corn.
- CLONIC. Successive, interrupted, alternating.
- COLICA PICTONUM. Lead colic.
- COLLIQUATIVE. Copious, exhaustive.
- COLLOID. Jelly-like.
- COMA. Completely unconscious stupor.
- CONGENITAL. Existing at the time of birth.
- CONGESTION. Accumulation of blood.
- CONSONANCE. Repetition or reduplication of sound, by the sonorous vibration of a body upon which it impringes.
- CONTACTIVE. Contagious.
- CONTAGIOUS. Conveyed by touch or actual contact.
- CONTRA-INDICATE. To prohibit.
- CONTRO-STIMULANT. Sedative.
- CORNEITIS. Inflammation of the cornea.
- CORYZA. A cold in the head.
- COSMIC. Belonging to the universal system or order of nature.
- COUP DE SOLEIL. Sun-stroke.
- COXALGIA. Disease of the hip-joint.
- CREPITANT. Crackling; applied technically to the *fine* crackling heard on auscultation in pneumonia.

- CRETIFY. To convert into a chalky substance.
- CUTANEOUS. Pertaining to the skin.
- CYANOSIS. Blueness, from imperfect circulation of aeration of the blood.
- CYNANCHE. Angina.
- CYST. A sac, cell, or bag, formed of membrane, and containing more or less fluid.
- CYSTITIS. Inflammation of the urinary bladder.

D

- DECUBITUS. The manner of lying down.
- DECUSSATION. Crossing X-like from side to side.
- DEPLETION. Abstraction of blood or other material, from the system.
- DERMATOPHYTE. A vegetation upon the skin.
- DESIDERATUM. Something desired or required ; an important object.
- DESQUAMATE. To scale or peel off.
- DETRITUS. Refuse ; the result of wearing or breaking down.
- DIABETES. Excessive urination.
- DIABETES MELLITUS. Excessive discharge of urine containing sugar.
- DIAGNOSIS. The discrimination of diseases ; the determination of the nature of an attack, or of the condition of the organs in a given case.
- DIAPHORETIC. Productive of perspiration.
- DIASTOLÉ. Dilatation.
- DIATHESIS. A constitutional tendency, peculiarity or habit.
- DICROTOUS. Double-beating.
- DIPHTHERIA. Membranous sore throat.
- DIPHThERITIC. Pseudo-membranous.
- DIURETIC. Productive of increased flow of urine.
- DRASTIC. Active, powerful.
- DYNAMIC. Relating to *power* or *force*.
- DYNAMIZE. To imbue with force or power.
- DYSCRASIA. A morbid state of the blood or of nutrition.

DYSMENORRHŒA. Difficult or painful menstruation.

DYSPHAGIA. Difficulty of swallowing.

DYSPNŒA. Difficult respiration.

DYSURIA. Difficult urination.

E

ECCHYMOSIS. Effusion of blood under the skin.

ECLAMPSIA. Convulsion.

ECTHYMA. A disease of the skin, characterized by *large pustules*.

ECTROTIC. Abortive; productive of abortion.

ECZEMA. A *vesicular* eruptive disease.

EFFETE. Worn out; dead.

ELEPHANTIASIS ARABUM. An enlargement of the limbs, scrotum, neck, etc.

ELEPHANTIASIS GRÆCORUM. A severe cutaneous affection, with purple tumors, etc.

ELIMINATE. To remove or drive out from the system.

EMBOLIC. Obstructive; applied to a clot thrown as a plug into an arterial trunk.

EMPHYSEMA. Distention of a cellular tissue with air.

EMPIRICAL. The result of *observation* only; as contrasted with *rational* or *deductive*.

EMPROSTHOTONOS. Arching of the body forward.

EMPYEMA. A collection of pus in the pleural cavity.

EMULSIFY. To suspend or diffuse an insoluble substance in water by means of mucilage.

ENCEPHALOID. Brain-like.

ENCEPHALON. The brain; *i. e.* the whole contents of the cranium.

ENDEMIC. Local; confined to certain localities.

ENDERMIC. Within or under the skin.

ENDOCARDITIS. Inflammation of the lining membrane of the heart.

ENDOSMOSE. The spontaneous interchange of fluids through organic membrane.

- ENTERITIS. Inflammation of the bowels.
- ENTOOZON. A worm, or other parasite, within an animal body.
- ENURESIS. Incontinence of urine.
- EPHELIS, Ephelides. Sun-burn.
- EPHEMERAL. Continuing for a day.
- EPIGASTRIC. Over the stomach.
- EPILEPSY. A disease characterized by recurring convulsions, during which the patient is unconscious.
- EPIPHYTE. A vegetable parasite.
- EPISTAXIS. Bleeding from the nose.
- EPITHELIOMA. An epithelial tumor.
- EPITHELIUM. A thin, superficial layer of cells upon a basement membrane.
- EPIZOOTIC. Affecting animals over an unlimited region. Not limited to any locality.
- EPIZON. A parasitic animal or animalcule.
- EQUINIA. Glanders; a malignant disease of the horse, sometimes conveyed to men.
- EREMACUSIS. Decay, or slow combustion.
- EROSION. Corrosion; destruction of tissue by chemical agency.
- ERUCTATION. Belching of wind.
- ERYTHEMA. A florid inflammation of the skin; classed with the *exanthemata*.
- ETIOLOGY. The study of the causation of disease.
- EXACERBATION. An increase of the symptoms; *e.g.* of fever; a ferbrile paroxysm.
- EXANTHEM. A rash, or florid eruption.
- EXANTHEMATA. A class of diseases in which, with fever there is an eruption characteristic of each.
- EXCITO-MOTOR. Reflex; relating to the production of movement in muscles by impressions transmitted through nerves and nerve-centres.
- EXCITO-SECRETORY. Reflex excitement of secretory organs by distant impressions, transmitted through the nerves.
- EXCRETA. Matters thrown out as waste from the body.
- EXFOLIATE. To fall or throw off, like leaves from a tree.
- EXOSMOSIS. See Endosmosis.

EXTRAVASATE. To throw blood out from the vessels.
 EXUDATION. The throwing out of lymph from the vessels during a morbid process. Also, the lymph itself which is thrown out.

F

FLOCCULENT. Resembling locks of wool.
 FOMITES. Things supposed to retain and convey contagion or infection; as clothing, merchandise, etc.
 FUSCEDO. Yellow staining of the skin in patches or blotches.

G

GANGRENE. Mortification.
 GASTRALGIA. Pain in the stomach.
 GASTRITIS. Inflammation of the stomach.
 GASTRODYNIA. Stomach-ache.
 GASTRO-HEPATIC. Affecting both the stomach and the liver.
 GESTA. Things *done*; actions; labors.
 GLOSSITIS. Inflammation of the tongue.
 GLUCOHÆMIA, Glycohæmia. Excess of sugar in the blood.
 GLUCOSURIA, Glycosuria. The presence of sugar in the urine.
 GOITRE. Bronchocele; enlargement of the thyroid gland.

H

HABITAT. The locality in which a plant or other living thing grows or abounds.
 HÆMATEMESIS. Vomiting of blood.
 HÆMATOSIS. Blood formation; blood development.
 HÆMATURIA. Voiding of bloody urine.
 HEMICRANIA. Pain in one half of the head.
 HEMIPLEGIA. Paralysis of the arm and leg, etc., of *one side*.
 HEMORRHOIDS. Piles.
 HEPATITIS. Inflammation of the liver.
 HEPATIZATION. Conversion into a liver-like structure.
 HERPES. Tetter; a vesicular eruption.
 HETEROLOGOUS. Different from anything natural to the body.
 HOMOLOGOUS. Parallel to or resembling things natural to the body. In *physiology*, this word has a more *extended* meaning.

HYDATID. A vesicular formation, generally considered to be an *animal parasite*, found in various organs, causing their distention into cysts or tumors.

HYDRÆMIA. A watery condition of the blood.

HYDRAGOGUE. Causing watery discharges.

HYDRAULICS. The mechanics of liquids; investigating especially the force and phenomena of liquid pressure and movement.

HYDROCEPHALUS. Dropsy of the head.

HYDRO-PNEUMOTHORAX. The presence of water and air together, in the cavity of the pleura.

HYDROTHORAX. Water in the chest: thoracic dropsy.

HYGIENE. The science of health.

HYGROMETRY. The measurement of the amount of moisture in the air.

HYPERÆMÆSTHESIA. Excess of blood in a part, with irritability; commonly called *chronic inflammation*.

HYPERÆMIA. Excess of blood in a part.

HYPERÆSTHESIA. Over-sensitiveness.

HYPERINOSIS. Excess of fibrin.

HYPERTROPHY. Over-growth.

HYPNOTIC. Promotive of sleep.

HYPOCHONDRIAC. In *anatomy*, the region over the liver, and the corresponding region on the left side. In *medicine*, a person affected with depression of spirits from dyspeptic disease.

HYPOCHONDRIASIS. Dyspepsia with lowness of spirits and imaginary complaints.

HYPOGASTRIC. Below the stomach.

HYPOSTATIC. The result of settling or gravitative deposition.

I

ICHORÆMIA. Contamination of the blood; pyæmia.

ICTERUS. Jaundice.

ICTHYOSIS. Fish-skin disease.

IDIOPATHIC. Primary; independent.

IDIOSYNCRASY. Individual peculiarity of system.

ILEUS. Iliac passion. The most violent form of colic.

IMPETIGO. A pustular eruption.

INCUBATION. Development; maturation; the period between the introduction of a morbid cause and the appearance of the resulting disease.

INDICATION. The *pointing* of the signs of disease to the proper mode of treatment.

INDURATION. Hardening.

INFECTION. As frequently used, synonymous with contagion.

INGESTIVE. That which is introduced into the body by the alimentary canal.

INNERVATION. Supply of nervous influence.

INSOMNIA. Sleeplessness.

INTERNUNCIAL. Communicating; transferring mutual impressions or excitations.

INTERSCAPULAR. Between the scapulæ.

INTUSSUSCEPTIO. Convolvulus; the reception of one portion of intestine into another.

IRITIS. Inflammation of the iris.

ISCHURIA. Difficult urination.

K

KAKOTROPHY. Perverted nutrition.

L

LANCINATING. Lancing, piercing, darting.

LARYNGITIS. Inflammation of the larynx.

LATENT. Concealed.

LEPRA. A scaly cutaneous disease.

LESION. Injury; essential change.

LEUCOCYTHÆMIA. Excess of colorless or white corpuscles in the blood.

LICHEN. A papular disease of the skin.

LIENTERY. Passage of undigested food through the bowels.

LIPOMA. A fatty tumor.

LITHIASIS. The formation of stone or gravel.

LOCHIA. The sero-sanguineous discharge following delivery.

LUMBAGO. Rheumatism of the lumbar region.

LUMBRICUS. A long round worm.

LUPUS A malignant affection of the skin, either tuberculous or ulcerative.

LYMPH. The fluid portion of the blood, without the corpuscles; the fluid of the lymphatic vessels; also, the fluid exuded during inflammation.

M

MACULA. A spot or stain.

MALARIA. Bad or poisonous air.

MANIA. Derangement, either intellectual or emotional, or both.

MARASMUS. Wasting away.

MATRIX. A formative or receptive structure or cavity.

MELANOSIS. Morbid deposit of, or conversion of tissue into, black pigment.

MENINGITIS. Inflammation of the membranes of the brain.

MENORRHAGIA. Excessive flow of the menses.

METAMORPHOSIS. Transformation.

METASTASIS. The transfer of a disease or symptom from one part to another.

METEORISM. Distention of the alimentary canal with gas.

MIASM. Marsh poison; the local cause of endemic country fevers.

MICROPHYTE. A microscopic vegetation.

MICROZOO. A microscopic animalculæ.

MILIARY. Resembling millet seed.

MODUS OPERANDI. The manner of action or operation.

MOLECULE. The minutest particle into which matter can be divided.

MOLLUSCUM. An uncommon tubercular disease of the skin.

MULTIFORM. Having many shapes.

MYALGIA. Pain (or soreness, tenderness) in one or more muscles.

MYELITIS. Inflammation of the spinal cord.

MYELOID. Resembling the spinal marrow.

MYOCARDITIS. Inflammation of the muscular tissue of the heart.

MYOPIA. Near-sightedness.

N

- NEBULOUS. Cloudy.
- NEPHRALGIA. Pain in the kidney.
- NEPHRITIS. Inflammation of the kidney.
- NERVINE. Affecting the nervous system.
- NEURALGIA. Pain, the seat of which is principally in the nerves.
- NEUROMA. A morbid enlargement of a nerve.
- NEUROSIS. A nervous affection.
- NISUS. Effort; attempt; active process.
- NORMAL. Natural; regular; healthy.
- NOSOGRAPHY. The description of diseases.
- NOSOLOGY. The classification of diseases.
- NOSOPHYTE. A vegetation connected with, or causative of disease.
- NUCLEOLUS. A central granule or spot within a nucleus.
- NUCLEUS. The central body within a cell; being itself, frequently, hollow.

O

- OCHLESIS. Crowd poison.
- OCTOHEDRAL. Eight-sided.
- ODONTALGIA. Toothache.
- CEDEMA. Swelling, from watery effusion in the cellular tissue.
- OPHTHALMIA. Inflammation of the eye.
- OPISTHOTONOS. Arching of the body backwards.
- OPTIMISM. Tendency to the *best possible* result.
- ORGANOGRAPHY. Delineation of the organs in their position.
- OSTEOSARCOMA. Cancerous tumor of bone.
- OTALGIA. Earache.
- OTITIS. Inflammation of the ear.
- OTORRHŒA. Discharge from the ear.
- OXALURIA. Presence of oxalic acid (as oxalate of lime) in the urine.
- OZONE. Oxygen in the nascent state, or with its chemical activity otherwise intensified (dynamized).

P

- PALPATION. Examination (of the chest, etc.) by the touch.
- PAPULA. A pimple.

PARACENTESIS. Tapping.

PARALYSIS. Loss of power or of sensibility; palsy.

PARAPLEGIA. Paralysis of the lower half of the body.

PARENCHYMA. A glandular or other organic structure, formed chiefly of aggregated *cells*.

PAROTITIS. Inflammation of the parotid gland.

PATHOGNOMONIC. Positively distinctive or characteristic of a certain disease.

PATHOLOGY. The study of the seat, nature, and essential characters and laws of disease.

PELLICULAR. Membranous.

PEMPHIGUS. A bullar eruption upon the skin.

PERCEPTA. Things perceived; impressions upon the senses and brain.

PERICARDITIS. Inflammation of the pericardium.

PERIPHERAL. Connected with the surface or exterior.

PERITONITIS. Inflammation of the peritoneum.

PERTURBATION. Disturbance by an exterior or extrinsic cause.

PETECHIÆ. Small purple spots in or under the skin.

PHLEBITIS. Inflammation of a vein.

PHLEGMASIA. An inflammatory disease.

PHLOGOSIS. Inflammation.

PHOTOPHOBIA. Dread of light.

PHOTOPSIA. Flashing of light before the eyes.

PHRENITIS. Inflammation of the brain.

PHTHISIS. Wasting. Phthisis pulmonalis, pulmonary consumption.

PICA. Depraved appetite.

PITYRIASIS. A disease of the skin, accompanied by the exfoliation of minute scales.

PLASMA. Organizable fluid: liquor sanguinis.

PLETHORA. Redundance of red blood.

PLEURITIS. Pleurisy; inflammation of the pleura,

PLEURODYNIA. Neuralgic pain in the region of the pleura.

PLEURO-PNEUMONIA. Inflammation involving both the lung and pleura.

PLEXIMETER. An instrument for *mediate* percussion; a stroke-measurer.

- PNEUMONIA. Inflammation of the lung.
- PNEUMOTHORAX. Accumulation of air in the cavity of the pleura.
- POLYDIPSIA. Excessive thirst.
- POLYSARCIA. Obesity.
- POMPHOLYX. A variety of pemphigus.
- PORRIGO. A parasitic disease of the skin.
- POST-ORGANIC. Following organization; effete; having been organized, but no longer capable of vitalization.
- PRÆCORDIAL. Over or surrounding the heart.
- PREMONITORY. Warning; threatening.
- PRODROMATA. Forerunning signs or symptoms.
- PROGNOSIS. Foreknowledge.
- PROPHYLACTIC. Preventive.
- PRURIGO. An affection of the skin, characterized by great itching, with little or no rash.
- PRURITUS. Itching.
- PSEUDO-MEMBRANE. False membrane; *i.e.* morbid or misplaced coagulation or organization of lymph.
- PSORA. Itch.
- PSORIASIS. A scaly disease of the skin.
- PTYALISM. Salivation.
- PURPURA. A hemorrhagic affection of the skin.
- PYÆMIA. The presence or formation of pus in the blood.
- PYELITIS. Inflammation of the pelvis of the kidney
- PYREXIA. Fever.

Q

- QUININIZE. To place under the influence of quinine.

R

- RABIES CANINA. Hydrophobia.
- RALE. A rattling sound.
- RAMULE. A small branch.
- RATIONALE. Explanation of a process or occurrence.
- RECUPERATIVE. Restorative; invigorating.
- REFLEX. Reflected; occurring under the influence of a *transmitted* excitation, as contrasted with a *direct* stimulus.
- REGURGITANT. Flowing or escaping backward.

- RENAL. Belonging to or affecting the kidney.
- REMITTENT. Having remissions; *i.e.*, periods of *diminution* of the symptoms (*e.g.*, of fever) without their total *subsidence*.
- RESORPTION. Reabsorption.
- RESUME. Summary; recapitulation.
- RETINITIS. Inflammation of the retina.
- REVULSION. Derivation.
- RHONCHUS. A rattling or roaring, or other abnormal sound, connected with respiration.
- RUBEOLA. Morbilli; measles.
- RUPIA. A bullar and scabbing disease of the skin.

S

- SACCHARINE. Of the nature of sugar.
- SALIVATION. Excessive flow of saliva; usually with soreness of the gums, coppery taste, &c.
- SANITARY. Pertaining to the preservation of health.
- SARCINA. A microscopic vegetation, growing in square or woolsack-like forms.
- SARCOMA. A fleshy tumor.
- SCABIES. Itch.
- SCHIRRUS. Hard cancer.
- SCIATICA. Neuralgia of the sciatic nerve.
- SCLEROTITIS. Inflammation of the sclerotic coat of the eye.
- SCORBUTUS. Scurvy.
- SEMEIOLOGY. The study of the signs and symptoms of disease.
- SENSORI-MOTOR. Relating to movements which are connected with sensations.
- SENSORIUM. An aggregate term, including those portions of the brain which are the centres of sensation and perception.
- SENTIENT. Endowed with sensation.
- SEPTIC. Putrefactive or decaying.
- SERUM. The fluid portion of blood after coagulation, or after the removal of its fibrin; also, the liquid transuding upon serous membranes; the liquid of certain dropsical effusions, &c.

- SIBILANT. Hissing.
- SOPORIFIC. Promotive of sleep.
- SPANÆMIA. Hydræmia; poverty of blood.
- SPERMATOOA. Microscopic bodies found in the generative fluid of the male.
- SPHACELUS. Sloughing.
- SPIROMETRY. The measurement of breathing power by the quantity of air exhaled after a forced inspiration.
- SPORADIC. Separate, independent, occasional; not endemic or epidemic or contagious.
- SQUAMA. A scale.
- STASIS. Stagnation; arrest of movement.
- STEATOMATOUS. Fatty; consisting principally of fat.
- STERCORACEOUS. Fæcal.
- STERTOROUS. Loud and snoring.
- STETHOMETER. A chest measurer.
- STETHOSCOPE. A tube used for mediate auscultation.
- STHENIC. Possessed of or attended by vigor and activity.
- STOMATITIS. Inflammation of the mouth.
- STRANGURY. Dysuria, ischuria.
- SUBCREPITANT. Crackling, but not typically identical with the crepitant rale; being a coarser sound.
- SUBJECTIVE. Originating in the mind, brain, or other part of the individual; as contrasted with *objective*, *i.e.* of *external* origin.
- SUBSULTUS TENDINUM. Jerking of the tendons; *e.g.* of the wrist in low fever.
- SUCCUSSION. Sudden shaking.
- SUDAMINA. Minute transparent vesicles, often seen over the breast or abdomen in low fevers.
- SUDORIFIC. Promotive of perspiration.
- SUGGILLATION. Collection of blood in spots under the skin of the dead body.
- SUPPURATION. The formation of pus.
- SYCOSIS. Mentagra.
- SYNCOPE. Fainting; suspended animation.
- SYNOVIA. The lubricating fluid of the joints.
- SYNURGIC. Co-operative: working together.
- SYSTOLE. The act of contraction of the heart and arteries; usually applied to the contraction of the ventricles.

T

TABES. Wasting; atrophy.

TÆNIA. Tape-worm.

TEGUMENT. Covering; skin.

TENESMUS. Straining; bearing down.

TENTATIVE. Experimental.

TETANUS. A disease characterized by muscular rigidity.

THERAPEUTIC. Sanative; medicinal; restorative; promotive of the cure of disease.

TINEA. Porrigo; a disease of the skin. *Tinea capitis*, contagious ring-worm.

TONIC. In physiology and pathology, as applied to the muscles, tonic contraction means fixed rigidity. In *materia medica* and therapeutics, a tonic is a strengthening medicine or agency.

TORMINA. Gripping pains.

TORULA. A minute vegetation, found (*Torula cerevisiæ*) in fermenting liquids.

TOXÆMIA. Blood-poisoning.

TOXIC. Poisonous

TRACHEITIS. Inflammation of the trachea.

TRANSUDATION. Passage of fluid through the walls of vessels.

TRAUMATIC. Resulting from a wound or injury.

TRICHOMA. Plica polonica.

TRISMUS. Lock-jaw.

TUBERCULIZATION. The deposition of tubercle.

TUBERCULOSIS. The development of the tubercular diathesis.

TUMEFACTION. Swelling.

TURGESCENCE. Distension with fluid, usually with blood.

TUSSIVE. Connected with cough.

TYMPANITES. Distention of the abdomen with air.

TYPICAL. Representative; characteristic.

TYPHOID. Resembling, and yet not identical with, typhus.

TYPHUS. A form of low continued fever.

U

URÆMIA. The presence in the blood of the constituents of urine from inaction of the kidneys.

URINA CIBI VEL CHYLI. Urine of food or chyle; *i.e.*, that passed after a full meal.

URINA SANGUINIS. Urine of the blood; *i.e.* that passed in the morning after sleep.

URINOMETER. An instrument used to estimate the specific gravity of urine; by the distance to which it sinks in the latter, as compared with that to which it will sink in water.

V

VACCINIA. Cow-pox; vaccination.

VARICOSE. Dilated; enlarged.

VARIOLA. Small-pox.

VARIOLOID. Mild or modified small-pox.

VASCULAR. Well supplied with blood-vessels.

VENESECTION. Blood-letting from a vein.

VERRUCA. A wart.

VESICAL. Pertaining to the bladder.

VESICATION. The production of a blister.

VESICLE. A small blister.

VESICULAR. Composed of, or resembling, vesicles or small cells.

VIBICES. Large spots of effused blood under the skin.

VIBRIO. A minute animalcule, rarely found in animal tissues or cavities.

VICARIOUS. Substitutive.

VITILIGO. Partial discoloration of the skin.

VOLVULUS. Intussusception.

